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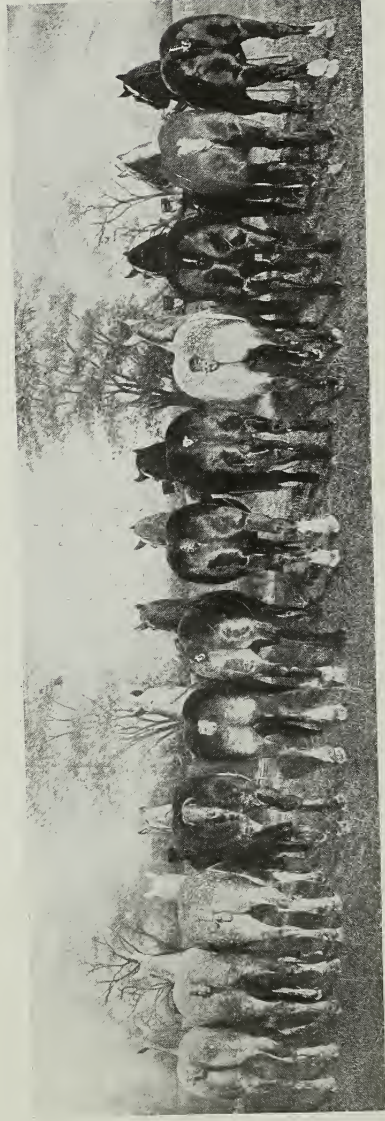
The Agricultural Student

SEPTEMBER
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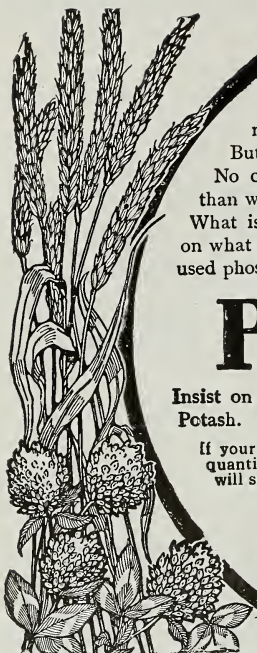
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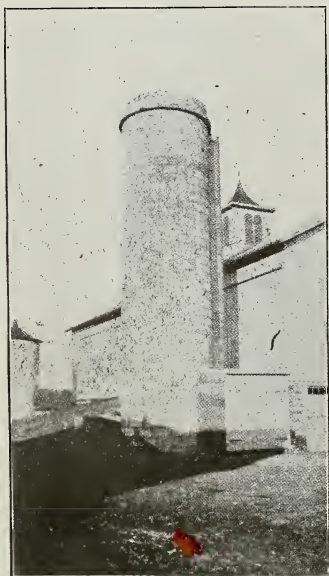
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May 5.....	35.6	37.8	13.45
May 8.....	38.5	37.5	14.43
May 12.....	39.2	32.8	12.85
May 13.....	39.7	41.8	16.59
May 18.....	39.5	34.8	13.74
May 20.....	40.5	34.0	13.77
May 23.....	38.4	34.2	13.13
May 27.....	39.6	36.8	14.57
May 29.....	39.0	35.5	13.48
			140.25

SAME WITHOUT "TENTHS" COUNTED

	Cream	Test	Fat
May 3.....	39	34	13.26
May 5.....	35	37	12.95
May 8.....	38	37	14.06
May 12.....	39	32	12.48
May 13.....	39	41	15.99
May 18.....	39	34	13.26
May 20.....	40	34	13.60
May 23.....	38	34	12.92
May 27.....	39	36	14.04
May 29.....	39	35	13.65
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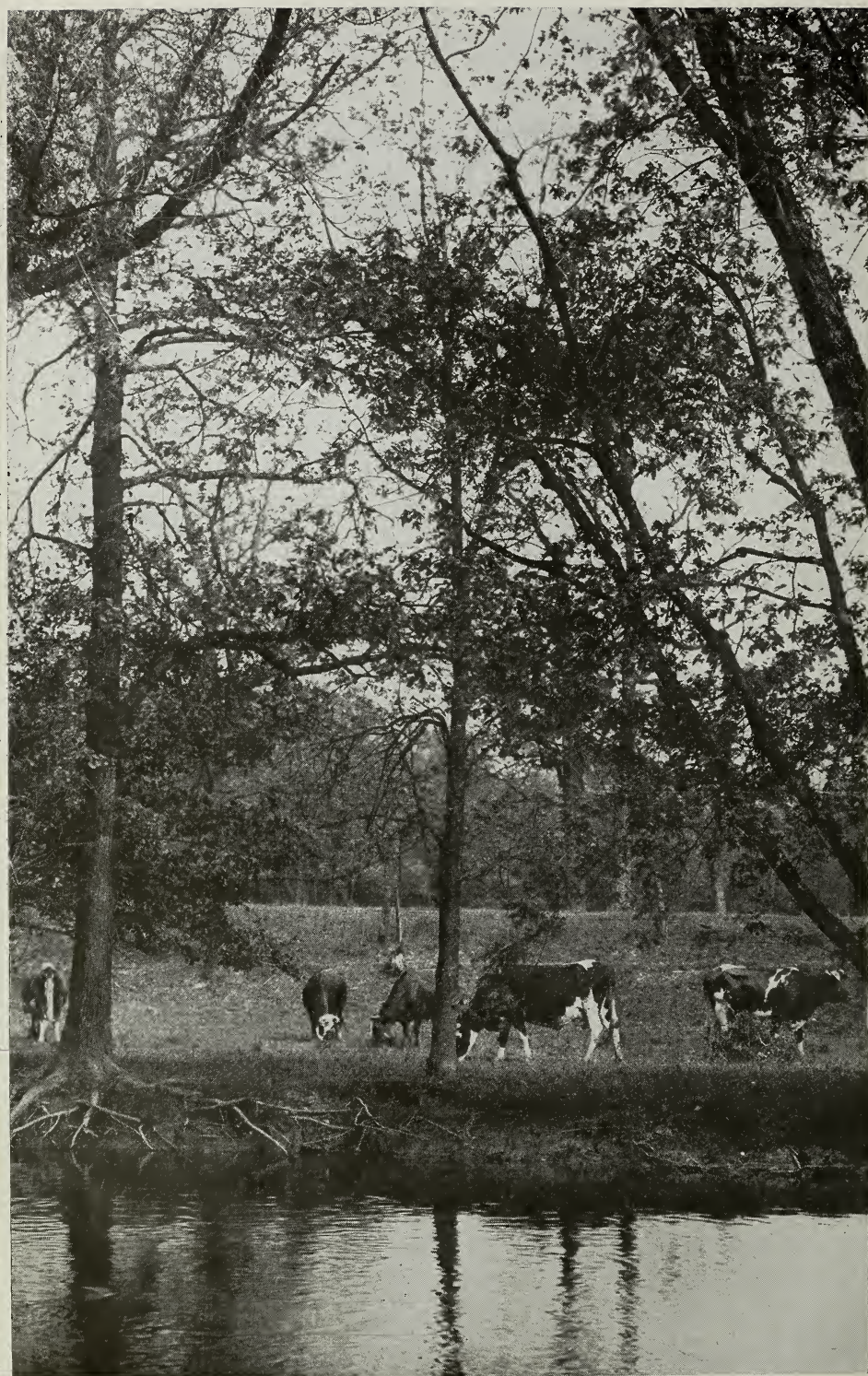
who are toiling silently and steadily for the development of agriculture and civilization in Ohio and of our country; who have been the source of wealth, prosperity and the leaders who have been the guiding hand in shaping the progress and the policies of our state and nation; and who stand for those principles that make for social betterment, morally, religiously, and educationally--is this volume of The Agricultural Student respectfully dedicated. -- -- --





Contents

	Page
IS EDUCATION NEEDED FOR PROGRESS IN FARMING?— Dr. W. O. Thompson.....	13
HOW HOG CHOLERA LOSSES MAY BE PREVENTED— Dean David S. White.....	15
DO SUCCESSES IN WHEAT GROWING "JUST HAPPEN?"— Clyde A. Waugh.....	21
FIRE-SAFE BUILDINGS MADE BY USE OF CONCRETE— H. Colin Campbell.....	25
POSSIBILITIES OF AGRICULTURE SHOWN IN SCHOOLS— Frank B. Pearson.....	29
MARKETING POULTRY EARLY BRINGS BEST PROFITS— A. D. Greenlee	31
FARMER JONES OUTLINES A PREPAREDNESS PROGRAM— Clarence M. Baker	35
EDITORIALS	39
WHAT DOES THE COLLEGE OFFER THE FARM WOMEN?— Rhoda E. Dick	43
AGRICULTURE IN THE HIGH SCHOOL COURSE— B. M. Davis	45
CURRENT LITERATURE	47
ALUMNI NOTES	49
NEWS NOTES	52



THE AGRICULTURAL STUDENT

Vol. XXIII. OHIO STATE UNIVERSITY, COLUMBUS, SEPTEMBER, 1916 No. 1

IS EDUCATION NEEDED FOR PROGRESS IN FARMING?

Factors That Young Men May Overlook in Emphasizing the Importance of Knowledge Available in a College of Agriculture; How Training in Rural Pursuits Makes for the Best Citizenship of Country

Dr. W. O. THOMPSON, President Ohio State University, Columbus, Ohio

CORRESPONDENCE for some years past indicates that farmers are looking upon agricultural education hopefully and seriously. In planning for their sons they show a settled conviction that education is necessary if a life-time of progress is desired. I am wondering how many boys have this long vision in their own plans. It is obvious that the present demand for service is so great that almost any one may secure a place to work and a reward that will enable him to live if he will but apply himself to the work in hand. There never has been a time, perhaps, when a person without education could more readily secure employment. On the other hand there never has been a time when a person well prepared by education for a definite work is more heartily welcomed or more eagerly sought. The prospect is that this class of persons will continue to be in demand—perhaps more in demand as time goes on.

There is danger, however, that young men may overlook some important factors in emphasizing the importance of knowledge available in a college of agriculture. It is true that the agricultural colleges represent the up to date information upon most of the important problems in agriculture. They also are prepared to teach this information in an effective way. It is a

comparatively simple problem for a young man now to become well informed upon the wide range of agricultural activities and be well equipped from the standpoint of information and methods.

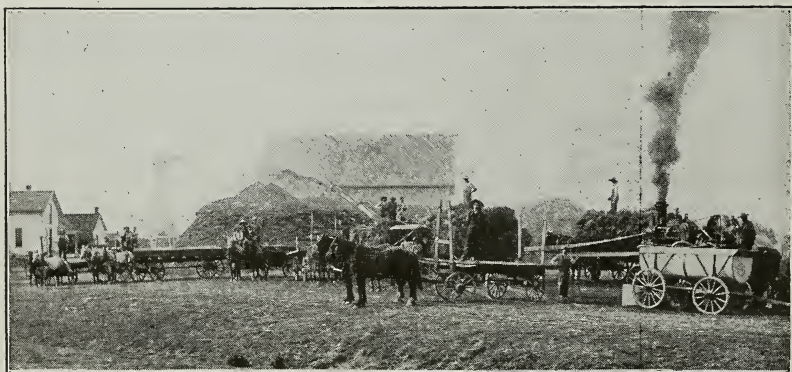
There are however certain factors in an education that need continued emphasis. Among these I venture to suggest first of all a sympathetic attitude toward agriculture and the people engaged in agriculture. One of the easiest lessons to learn in college is to cultivate a sense of superiority over others. There is a certain haughtiness of attitude almost amounting to snobbery easily detected in many college students and graduates. The world will knock that out of you in short order unless you become a professor and are left to enjoy your own estimate of yourself. The professor is so much away from the hard knocks of the every-day world that he may indulge a good many vain illusions. The every-day world, however, will have none of this but will insist upon taking you at its own estimate rather than at yours. In the agricultural world whether of practical farm operation, of scientific investigation, of administration or of teaching there is a strong demand for men whose sympathies are in the right place and very little demand for any other kind. Agricultural education

should show the value of education but should not sneer at agriculture.

A second suggestion is that education should cultivate our graces and eliminate our unpleasant attitudes, manners and habits. The common phrase that certain people have too many corners or that they are porcupines or that they are grouchy will suggest what I mean. In this world where association and cooperation are vital to all achievement it is well for us to take a careful inventory of our own personal qualities with a determined purpose to eliminate the undesirable and to cultivate the desirable. Education should not merely train our powers, it should subdue many of them while developing others. Education does not exhaust itself upon subjects or methods; it should reach the person and cultivate a pleasing personality. In the selecting of men for positions, academic or commercial, all responsible officers will say that these by-products of education are the final test of a man's power and place in the world. There is an increasing demand for men who are bigger than any work they do, men who can reenforce their message with a personal character at once winning and forceful. All this is not a

mere accident of birth or breeding. Every one may do much to enlarge his own life by cultivating his habits of life and behavior to conform to the best standards of life. To neglect such culture is the highest folly.

The final suggestion may be that the standards of agricultural life will be largely at the disposal of the agricultural students. We may trust education to eliminate ignorance and probably to develop some skill and new power. We shall have to trust the quality of the student to determine the standards. In agriculture, as in engineering, or any other of the industrial pursuits, the spirit of the educated man must permeate the entire activity if it is to reach the best results. Agriculture like every other calling needs always its own self respect. For this we must look to the student who has had the opportunity to study it under the best possible conditions. It is the aim of the University to present agriculture under these conditions so as to inspire the student not only with love for agriculture, but with such an esteem for the men engaged in it as to make this great fundamental industry an opportunity for the best citizenship of the country.



HOW HOG CHOLERA LOSSES MAY BE PREVENTED

Combatting the Disease by Vaccination and Sanitary Measures

DR. DAVID S. WHITE, Dean, Veterinary College, Ohio State University

HOG cholera is by far the most prevalent and disastrous disease of swine. Since 1833, when the first recorded outbreak in this country occurred in Ohio, where it was probably introduced with imported swine or perhaps bacon from Europe, it has proved a scourge to the hog industry, making annually great inroads into the business of hog raising.

In the early days before the railroads, its distribution was comparatively limited, but since the develop-

Like most acute, communicable diseases which become widely prevalent the outbreaks of hog cholera come in waves. While some years swine are comparatively free from the infection or the disease assumes a mild form with a low death rate, in others it is extremely virulent, killing off hundreds of thousands of hogs.

The cause of hog cholera is something which is contained in the blood, urine and sometimes in the excrements of cholera-sick hogs. This something,



Hogs Should Be Fed in Sanitary Quarters

ment of transportation facilities hog cholera has spread from the middle west to all parts of the country especially toward the west where the breeding of swine had become a profitable industry. The losses from cholera are enormous, reaching as high as \$200,000,000 with 45,000,000 hogs infected in 1888, and averaging close to \$50,000,000 yearly. The farmers of the corn belt naturally suffered the brunt of the damage wrought by the disease; outside of the corn belt, while the direct loss is far from insignificant, hog cholera is not so serious a menace to the relatively limited hog production.

which is called a "virus," is too small to be seen even with the highest powered microscope. Even filtering blood containing it thru porcelain filters does not remove the virus. If the blood of a hog which has died of anthrax or septicemia (blood poisoning), is filtered thru porcelain the germ in each case will be removed and the blood which has passed thru the filter will be sterile. Not so with the virus of hog cholera. Hence, it is spoken of as a "filterable virus;" or, because it is not visible under the microscope, as an "ultra-microscopic virus." As far as we know from experiment and observation there

is no other cause of hog cholera. The disease seems to be due to the presence of this filterable virus which is passed usually with the urine of cholera-sick hogs contaminating food and water with which it is taken up by healthy but susceptible swine. Obviously as the blood of a cholera-sick hog contains the virus and as this virus-containing blood is now being used indiscriminately and often unskillfully in vaccinating hogs to prevent cholera, many outbreaks of the disease can be traced to infection from this source.

Hog cholera virus is carried onto non-infected farms or premises in a variety of ways. Probably the most important way is thru the infected hog which is brought in by purchase or may stray from infected herds, be borrowed, as in the case of breeding boars, or show swine returned from fairs and expositions. Quite often hogs in the incubative stage of cholera are introduced to the herd. Such swine appear healthy at the time of purchase, but a few days later the symptoms appear. Further hogs suffering from cholera in a chronic form especially old breeding boars and sows, so-called "germ carriers" which show no symptoms of the disease, often introduce cholera on a farm.

The virus may also be brought onto the premises by intermediary agents such as stray dogs, crows, fowls, and pigeons. Persons can also carry cholera on their boots and clothing.

Once the disease breaks out it is spread by the urine, feces and other discharges of the sick. The careless disposition of the dead (throwing carcasses into waterways; leaving them on the fields; too shallow burial; incomplete cremation, etc.) is also a factor. Hauling sick or dead cholera hogs

in wagons thru premises and along the roadways helps to spread the disease. It is a common practice when hog cholera is discovered to exist on a farm for the owner to attempt to get rid of the disease by selling these hogs which are in marketable condition. Too often a close discrimination between the infected and non-infected is not made. In transit or soon after arrival at their destination the disease may break out, infecting railway cars, chutes, and pens. Hog cholera, therefore, is spread over huge areas and especially along lines of traffic.

The symptoms of hog cholera are too well known to the majority of hog raisers to need detailed discussion. While diseases other than cholera do kill hogs in this state, fully 90 percent of the swine which die in Ohio die of hog cholera.

Hog cholera often begins in a herd without warning. Frequently the first sign of its presence on a farm is the sudden death of a pig or two. Later the disorder assumes a less violent type and sick pigs are noted in the herd. One of the first symptoms is fever which may reach 105 degrees F. or more; there is loss of appetite; a tendency to hide in the litter or under a building or straw stack; a stiffness and a weakness of hind parts; constipation which sometimes later gives way to diarrhea; and a purple discoloration of the unpigmented skin of the abdomen, ears and tail. There is often coughing, labored breathing and a change in voice which assumes a higher pitch than normal. The eyelids are reddened and pus accumulates on their margin. Young pigs commonly develop symptoms of "thumps." The mortality is usually high. In years when the disease is virulent fully 90 percent of the

swine affected die. Those which recover usually remain unthrifty and stunted in growth.

In no one animal will all of these symptoms appear. As hog cholera is fundamentally a blood disease, a septicemia or blood poisoning, and as the blood reaches all parts of the body, obviously if the patient lives long enough, a great variety of symptoms can develop. Of the symptoms noted two are the most characteristic, namely, a high temperature and purple discolorations

ly tested out all of them have been found valueless.

As they could find no cure for cholera, scientists have turned their attention to its prevention. While much can be done with hygiene and sanitation, the problem can be attacked more directly by applying the principles of disease immunity by which most of the recent attempts of control have been made. It is known that if a hog recovers from an attack of cholera it will rarely take the disease a second time.



Treating Hogs for Cholera

of the skin. Where these symptoms are observed in a swine herd, cholera usually exists.

From the standpoint of drug treatment cholera is an incurable disease. There is no drug, chemical nor combination which will cure the disorder. The farmers of this country have spent untold sums buying "sure cures" for cholera only to find their money worse than wasted. Once the disease has gained headway in a herd no patented, much advertised nostrum will cure it. When these "cures" have been accurate-

Something has been created in the body of the cholera-sick hog which is antagonistic to the virus of the disease, eventually destroys it and after the destruction remains in the body, or is constantly being reproduced by the body cells, keeping the recovered animal in a state of preparedness against further invasion by the same virus. This something we call the "antibodies." The recovered and no longer susceptible animal is called an "immune." The immunity acquired in this way is a natural immunity.

It is further known that immunity can be produced artificially. There are two ways of accomplishing this. First, the animal may be given the disease in mild and non-fatal form. This may be done by introducing into its system the virus of the disease which has been weakened by being subjected to a certain degree of heat and to certain chemicals. Another way is to give the virus full strength but at the same time introducing sufficient antibodies to control it. In both these instances the im-

eliminated. Such an immunity is called "passive."

Employing these principles immunity against hog cholera can be produced, and in two different ways:

(a) An active immunity is brought about by injecting healthy pigs with a small quantity of blood containing hog cholera virus and at the same time with enough serum containing the antibodies to control the virus and thus prevent the serious illness or death which would follow if the virus were left un-



Water Essential for Growing Healthy Hogs

munity produced is long lasting, the animal being usually protected against disease due to the same virus for its natural life. Such an immunity is called "active" and is the same in effect as the immunity acquired by taking the disease from natural exposure.

The other way of producing artificial immunity is to introduce into the system of an animal only the antibodies of the disease against which we seek to protect. This is a safe method of producing immunity but has one disadvantage. The immunity is of short duration. The antibodies injected are

controlled. In hog cholera work this method is called the "simultaneous method" or "serum-virus treatment." Where properly used it is an effective means of controlling the disease.

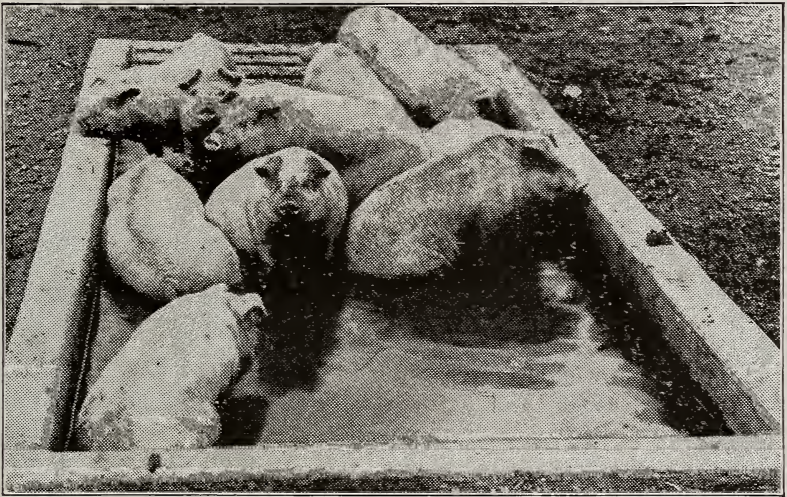
(b) A passive immunity may be acquired by injecting the blood serum taken from a hog which has been gradually brought up to a high point of resistance against cholera by repeated injections of controlled virus until its blood serum contains large numbers of antibodies. Such a hog is called a "hyperimmune." While this is a safe method of immunization, in healthy

herds it lasts too short a time, usually not longer than a month. Therefore to keep the hog immune for a longer period will require repeated injections provided of course that following the injection of serum within the usual time limit no cholera virus enters the body of the hog so treated. This method is called the "serum alone treatment."

Each of the two methods of immunizing against cholera is alright in its place. Either method may be contra-indicated depending upon circumstances.

era when butchered. (d) Show swine.

The simultaneous treatment should not be employed under the following circumstances: (a) When it cannot be administered by an experienced, skilful veterinarian as the indiscriminate and unskilful use of the simultaneous treatment has done much to spread cholera. (b) In communities where cholera has never existed. Occasionally a vaccinated hog may eliminate virus in its urine and thus infect the premises. Therefore in non-infected districts this method of immunization



Hogs in a Sanitary Wallow

The simultaneous treatment should be used only under the following conditions: (a) Where healthy hogs are kept on a known or probably infected farm. In hog cholera districts most of the farms have had cholera on them and are always likely to be visited again by the disease. (b) Where there is a constant interchanging, buying and selling of hogs, as is the case of dealers. (c) Hogs fed the kitchen offal of public institutions. Such swine are subject to cholera as the garbage they receive often contains bacon rinds which came from hogs that had chol-

should be employed only with great care to keep the vaccinated herd isolated. (c) In badly infected herds. (d) Where only a part of a herd is to be immunized. (e) Sows about to farrow. (f) Suckling pigs. Suckling pigs are not rendered actively immune with the simultaneous method. They should be treated with serum alone until after weaning and then given serum-virus.

The "serum treatment," which includes both the serum-virus and serum alone methods, while the best known way of control of hog cholera is not infallible. Occasionally failures result.

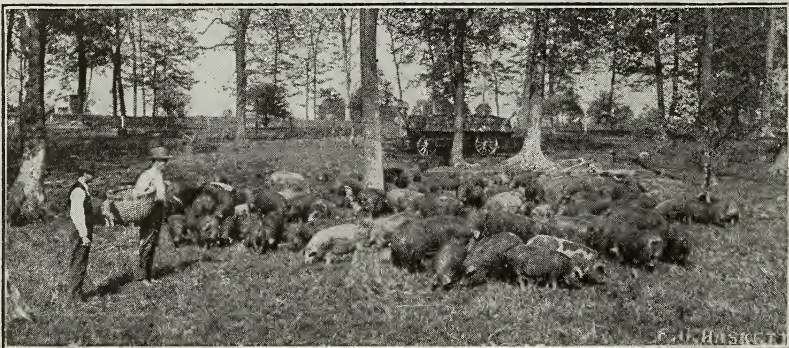
There are many factors of uncertainty which enter into its application. Sometimes the diagnosis is at fault. In an experience with a herd of creamery-skim-milk-fed shoats which had been treated unsuccessfully with serum-virus, an examination showed the pigs were dying of tuberculosis and not of cholera. Hog raisers sometimes do not vaccinate soon enough but wait until some of the hogs become visibly sick. Generally speaking there will always be more sick hogs than are apparent. Where 50 percent or more of a herd is infected not much can be expected from vaccination. Sometimes the one who administers the serum may be at fault. A common error is to give too small doses, the administrator underestimating the weight of the pig. In rare instances the serum may not be potent. The field man, however, is very apt to blame the serum unjustly. Most of the serum produced today, especially that made in state plants, is potent and has been thoroly tested before being sent out. All of the serum plants doing interstate business are now under Federal control.

Finally, even tho potent serum is used, the herd apparently healthy, none

showing fever when vaccinated and the proper dose given, the vaccination does not protect. Fortunately these unpleasant experiences which often cannot be explained are rare. It is one of the risks which must be incurred in dealing with the problem of hog cholera control.

The best time to vaccinate against cholera is when the pig is young. In infected districts or when infection threatens it is advisable to inject the suckling pig with serum alone and after weaning with serum-virus. By so doing the cost is reduced as it takes less serum, the pigs are easier to handle and not so liable to be injured during the administration, and if bad luck attends the attempt, the money loss is less than with larger hogs. Pigs so treated will be, as a rule, cholera proof during the rest of their natural lives.

Good judgment is required in the application of vaccination to hog cholera control. As there is more to the dairy business than milking the cow so is there more in hog cholera vaccination than mere indiscriminate and too often unskilful injection of "serums" under the porcine skin.



DO SUCCESSES IN WHEAT GROWING "JUST HAPPEN?"

Considerations in Use of Fertilizers, Seed and Soil Preparation

CLYDE A. WAUGH, Soil Improvement Committee, Chicago, Illinois

MANY farmers consider their business as a rather uncertain thing. If the Hessian fly doesn't "happen" to be present, if smut doesn't "happen" to do grave things, if the weather doesn't "happen" to be unfavorable, if the seed "happens" to be good seed, and the ground "happens" to be fertile, and if all the other factors bearing upon wheat production "happen" to be favorable, they consider their season's

thru the season and must be fed liberally if large yields are to be obtained. The dairy cow requires the same sort of treatment and the beef cattle which top the market are never allowed to lose their calf fat and are fed liberally with a balanced ration from the day they are born until they go into the car for market.

The Hessian fly is one of the so-called "uncertain things" in wheat



A Yield of Wheat That Did Not Happen

work lucky, and are content to be glad that one or more of the things that prevent profitable yields did not "happen" to enter into the matter.

Farming as far as production is concerned, is one of the most definite things in the world. Fifty and 55 bushels to the acre wheat crops don't "just happen," corn crops that win state championships in the corn growing contest don't "just happen," new production records in dairying, or quantity in finished baby beeves are other things that don't "just happen." Wheat crops and corn crops must be handled properly

production. Farmers will tell you that some years they are bothered with the fly and that other years they are not troubled with the pest. Other farmers who have followed the methods advocated by the United States Department of Agriculture know that the Hessian fly may be successfully fought by seeding the wheat late and hastening the fall growth by the use of 200 to 400 pounds of fertilizer containing at least 2 to 3 percent of available ammonia. Farmers' Bulletin 640 of the United States Department of Agriculture says in part:

"The application broadcast of some quick-acting fertilizer containing a large percentage of phosphate, made as soon as general infestation is apparent will cause the plants to tiller more freely and give them sufficient vigor to withstand the winter, and thus increase the number of healthy stems the following spring. While it may seem 'far fetched' to bring forward as a preventive measure the enrichments of the soil, a fertile soil will produce plants that will withstand with little injury attacks that will prove disastrous to plants growing on an impoverished or thin soil. This is because a fertile soil will enable an infested plant to tiller freely, and these tillers will have sufficient vitality to withstand the winter and send up head-producing stems in the spring."

A crop rotation to keep the soil in good condition for following crops, to help escape the danger of loss from crop diseases that remain in the field, to help maintain the organic matter and to keep the soil in good physical condition is one of the requirements in wheat production if record yields are to be obtained.

A well-drained fertile soil, fairly heavy and firm, yet friable, is best for wheat. It should be compact to give the wheat a firm root bed, which prevents heaving during thaws. Such a soil supplied with organic matter holds moisture and available plant food better than open, lighter soils. An extremely heavy and compact soil or one with a very hard subsoil is not best for wheat, tho in handling such soils it is often well to grow wheat when seeding to grass for permanent pasture. Drouth is more likely to injure wheat on sandy soils, while standing water and ice may kill the wheat on poorly drained clays. Wheat on soils well

stocked with organic matter is better able to withstand long dry or rainy spells or severe winter conditions than on land deficient in organic matter or humus.

With the exception of barley, wheat suffers from sour or acid lands more than any of our common farm cereals. In an eight-year test, the Ohio Experiment Station secured an average of 2.37 bushels more wheat to the acre on limed than on unlimed land. Where fertilizers were used with and without lime, the yields from both lime and fertilizers were greater than the sum of the yields when each was used alone. They are profit-making twins. It is especially important to test the wheat land and apply lime if it is sour, because timothy and clover are usually seeded in wheat and one or both may fail in sour soil.

Organic matter is especially important in wheat soils because it holds water like a sponge and at seeding time releases it to help germination. In the spring it holds the winter's rains until the wheat needs them for final growth and ripening. A sufficient supply of moisture at filling time often makes a crop. The farmer cannot make it rain at this critical stage, but he can keep up the organic matter that will hold the winter's rain until needed.

Dean Vivian of the Ohio College of Agriculture says:

"Organic matter absorbs from ten to twelve times its own weight in water and holds this water so loosely that it can be absorbed by the root hairs of the growing plant."

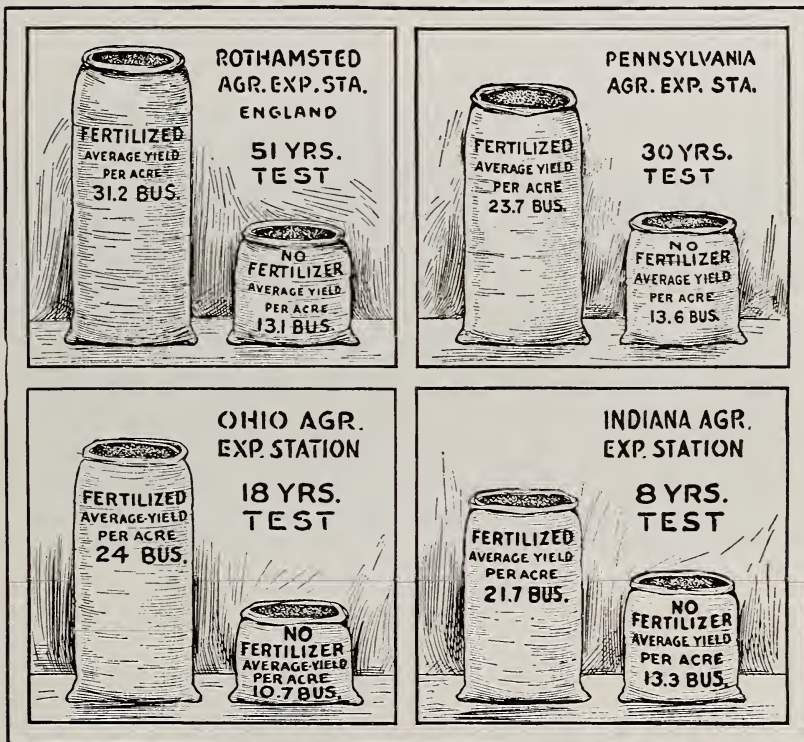
Organic matter also modifies the texture of the soil so that air will circulate within the root-growing area. If there is much organic matter or green manure turned under it is essential that the land be disked before plowing and both

rolled and disked immediately after plowing.

Poor seed cannot produce a good crop. If but four seeds out of five grow, it means four plants of wheat where you might have had five. With poor seed you may have but 10 kernels in a head where you might have had 25 or 30 and light kernels where they might have been heavy. Poor seed wheat is so dear in the long run that you cannot afford to drill it.

as important that you know the food requirements of the wheat crop as it is that the "eye of the feeder know his cattle."

Many of the same principles that apply to animal feeding apply to plant feeding. For instance, it is the same nitrogen that forms the essential constituent of protein in animal foods that is the principal constituent of ammonia in fertilizers. In feeding young animals, protein is the muscle and bone



Fifty-five bushel wheat crops, such as 17-year-old Dewey Hanes of Ohio grew last year, must have plenty of a balanced plant food ration to give them a quick start in the fall, to enable them to resist disease and insect attacks, to make enough growth in fall to cover the ground before winter sets in, to start out early in spring, and to make a straight standing, early maturing bumper crop of first quality. It is just

builder; in plant feeding it is ammonia that gives the plants a quick start and heavy stalk or stem growth.

Besides the nitrogen in ammonia and proteins, plants and animals need other foods to make their growth complete. Phosphoric acid fed to plants is a crop ripener and a grain plumper. Potash is the stalk strengthener and the grain filler. Wheat needs a fair amount of ammonia for a quick start, a large

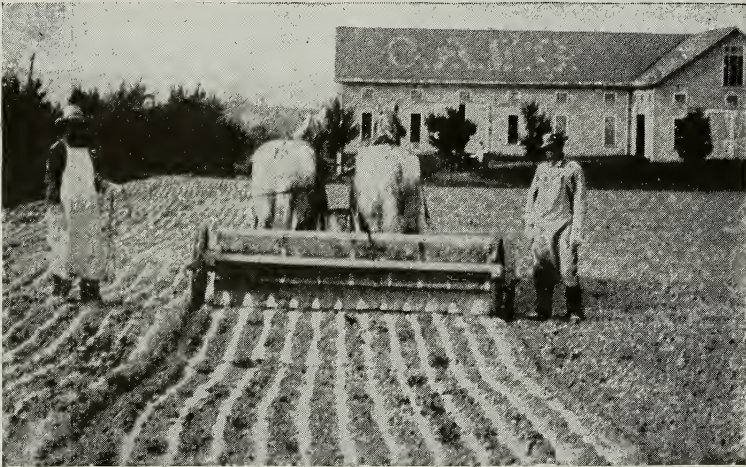
amount of phosphoric acid for plump, hard, early maturing grains, and a fair amount of potash to give strong straw and well-filled heads.

All soils contain the plant food ingredients for crop production, but in varying proportions. Sandy soils contain little of the element nitrogen in the form of ammonia, only a fair amount of phosphoric acid and a small amount of potash. Hence, a wheat crop on a sandy soil usually requires a greater amount of plant food than on a loam soil and also requires a plant food car-

manure, but supply them in a more available and concentrated form.

On extremely poor soils an application of fertilizer has been known to double wheat yields. In tests on farms in 13 Indiana counties, fertilizers increased wheat yields 8.44 bushels per acre. Thirty years of experimental work at the Pennsylvania State College of Agriculture has shown that judicious applications of fertilizers on wheat made a gain of 74 percent in yield per acre.

If no manure is used on the wheat



Liming Essential in Maintaining Fertility

rying a higher percentage of all three of the elements of plant food than does the loam.

The addition of 40 pounds of acid phosphate to a ton of manure makes it a balanced plant food, and almost doubles its value. Every farm should utilize all the manure it can produce, but even when all manure is carefully conserved and applied, not one farm in a hundred produces enough to maintain sufficient fertility.

Commercial fertilizers contain the same plant food ingredients found in

crop, 300 to 500 pounds of fertilizer thru the fertilizer attachment of the wheat drill at the time of planting, or thru the broadcast lime and fertilizer distributor previous to planting, should be applied. If manure is used, apply 200 to 300 pounds per acre in the same manner.

On a sandy soil a fertilizer analyzing 2 to 4 percent of ammonia, 8 to 10 percent of available phosphoric acid, and 3 to 5 percent of potash is likely to make up for the deficiencies of the soil and meet the needs of the wheat crop.

FIRE-SAFE BUILDINGS MADE BY USE OF CONCRETE

Troughs, Fence Posts and Silos Can Be Cheaply Constructed

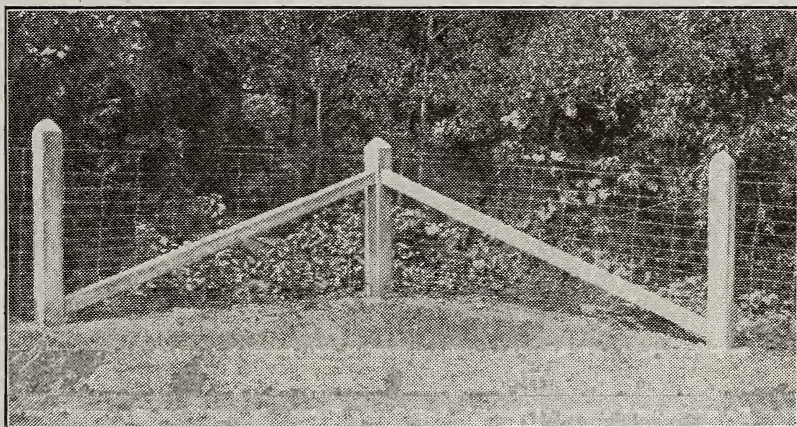
H. COLIN CAMPBELL, Chicago, Illinois

ANY one profits in the end if in his life he contributes to greater efficiency in or of anything. Those who have, year after year, expended time and labor to keep the usual run of temporary farm structures in condition fit for use, have perhaps neglected to total the money value of such efforts. If they had done so, they would have realized how unprofitably their time had been expended.

Farmers who have used concrete in

senting years of savings, not to mention a season's crops, are destroyed almost in a moment by fire. For this reason the prospective builder can do no better at the start than give proper consideration to the advantages of building fire-safe, and any material which is fire-safe is almost certain to combine with the characteristic of permanence.

Probably no material which may be so extensively used for farm building

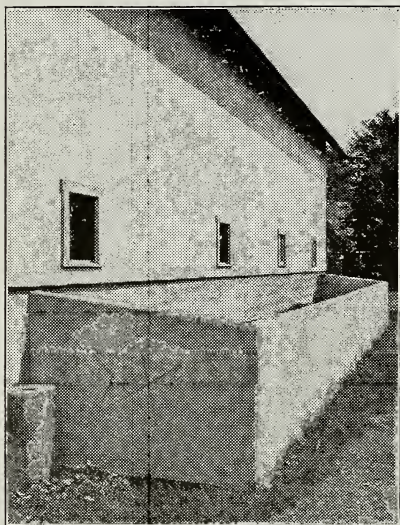


Concrete Makes Ideal Fence Posts

some of the various ways in which it is applicable have realized that the permanent, sanitary improvements which concrete insures make farm tasks pleasurable and less expensive. Concrete is of first importance in making for greater efficiency on the farm. A consideration that is frequently overlooked in deciding upon a building material is whether the material chosen will protect against exposure to fire. Fire once started among farm buildings usually ends in a mass of smoldering ruins. Frequently it happens that all of one's valuable stock and equipment, repre-

improvements combines both of these qualities in such a degree as does concrete. Like any other building material, concrete gives best results only when used in ways and for purposes which practice has proved best. Many who have used concrete have not had the results of their labors turn out thoroly satisfactory. This is unfortunate because every instance of dissatisfaction with any widely recommended material is likely to keep one from using it unless he has been educated to know the cause of such dissatisfaction and how it might have been prevented.

For most classes of concrete work on the farm, no extraordinary skill or ability is required. The rules that govern concrete work are simple to understand and easy to follow. There is one point that should, however, be borne



Concrete Manure Pit.

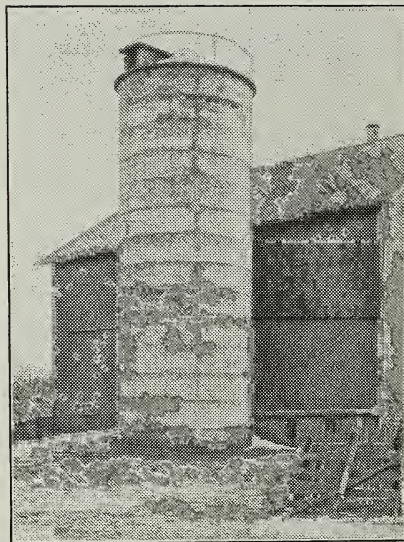
in mind. In most classes of concrete work, every one of these fundamental rules is just as important as any other one and it is likely that neglect to observe one requirement which may seem relatively unimportant will be the cause of dissatisfaction later.

The importance of using clean, well graded sand is often underestimated or entirely disregarded. Many persons think that all of the success in concrete work lies entirely with the Portland cement. As a matter of fact, cement manufacture is such a standardized process that Portland cement today is an exceptionally reliable product and no one need fear that any dissatisfaction in the concrete work can be traced to the use of any of the well-known brands of Portland cement now on the market.

Strength and density of concrete are dependent upon correct proportioning

of all materials. Sand and pebbles must be clean, well graded and ranging from the smallest particles to a maximum usually fixed at $1\frac{1}{4}$ or $1\frac{1}{2}$ inches. Water used in concrete mixtures must be clean. Proportioning of materials must be such that the cement will coat every particle of sand, and the sand-cement mortar will coat every pebble or particle of broken stone and be slightly in excess of what is actually required to fill the air spaces or voids in the mass of pebbles. Unless such conditions are secured the concrete will be porous, hence not watertight, and the sand and pebbles will not be firmly bound together into one mass by the cement. If these principles of proportioning are carefully observed, the resulting concrete will be practically free from air spaces and consequently strong, dense and watertight.

There are many uses to which con-



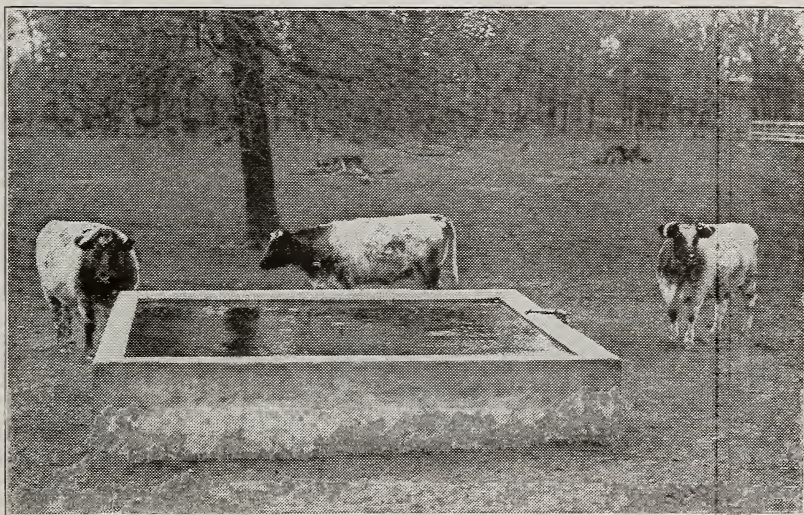
Concrete Silo

crete can be put on the farm. Probably most farmers who have been attracted by the possibilities of concrete have first tried out their skill in constructing a watering trough or tank, and it may be

true that some of such concrete tanks have been unsatisfactory, so in those cases first attempts at concrete work have been discouraging. The reason for this is simple. If the concrete was not properly proportioned or placed, if these requirements were not observed and little or no reinforcing metal was used, or if used was improperly placed, and when the construction was finished no precautions were taken to prevent the concrete from rapidly drying out, it was to be expected that dissatisfaction would follow. The tank probably

$\frac{1}{4}$ inch in greatest dimensions, to 3 cubic feet of well graded pebbles or broken stone ranging from $\frac{1}{4}$ to $1\frac{1}{4}$ inches in greatest dimensions. After the last concrete has been placed the tank must be protected by some covering that will prevent rapid evaporation of the water from the concrete.

Live business farmers have learned to appreciate the great advantage and economy of feeding green succulent food to stock during the winter. The silo has revolutionized dairying and some phases of stock feeding. The ad-



Concrete Watering Trough

leaked. The concrete was soft and porous, the foundation was not properly prepared and an unequal settlement resulted in cracks.

A concrete tank or trough should be built in one continuous operation to avoid the construction seams or joints that follow leaving off concreting one day and resuming it the following day. For tank construction a rich mixture such as 1:2:3 should be used. This means 1 sack of Portland cement to 2 cubic feet of clean, well graded sand, in which the coarser particles predominate and do not exceed a maximum of

vantages of the silo have become so generally known and appreciated that the question to be decided by the farmer today is what type of silo will prove best from the investment standpoint. The question involves not only first cost but cost of maintenance, also interest on the investment, and depreciation. If low first cost is considered of prime importance, concrete would not often be selected, but carefully comparing all of its advantages against those of any other silo construction materials, concrete stands foremost. It is natural that this type of silo

should find favor with the progressive farmer. Concrete is adaptable in silo construction because it can be used in several ways, that is, as monolithic construction, as concrete block or as concrete stave.

The use of concrete fence posts has been increasing at a rapid rate for a number of years, which is explained largely by the scarcity of fence post timber in many sections of the country and the increasing cost of wood posts. It is evident that the demand for fencing will be greater in the future than it has been in the past, and that the modern farmer will demand permanence since he has become tired of the annual replacement of wood posts and the continual necessity for straightening up fences. In the matter of first cost, the wood post now has little advantage and as regards length of life, freedom of possible damage by fire, rotproofness and stability, the concrete post is in a class by itself.

Another point sometimes overlooked is that concrete fence posts can be made in winter during what would otherwise be idle days. All that is needed is a good tight shed where the temperature can be maintained at 50 degrees F., or above, and a supply of frost-free stored materials arranged for before winter sets in.

One of the present problems before the farmer is the maintenance of soil fertility. The silo and dairying solves the problem in part; the concrete manure pit does the rest. Business farmers today realize the importance of returning to the soil as much as possible of what was taken from it. Concrete floors in the barns with concrete gutters leading to the concrete manure pit insure the conservation of all stable wastes, and will go to solve the problem of maintaining soil fertility.

Among the farm appointments that can be secured through the medium of concrete, none is easier to build nor more certain to give good returns on the money and labor expended than a concrete feeding floor. Cattle fed in clean surroundings gain more rapidly in weight and are more certain to be free from disease than where kept in surroundings that are the reverse.

There are two types of construction used for concrete feeding floors, which are nothing more than a series of concrete walks laid side by side, and the same principles of construction which apply to walks apply to floors.

In one-course construction a relatively rich mixture is used throughout, such as a 1:2:3 or a 1:2:4 mixture. In two-course construction a leaner concrete, such as a 1:2 $\frac{1}{4}$:5, is used for a 4-inch base, with a 1-inch top or wearing course of richer (1:2) proportion. The greater ease with which one-course floors can be constructed makes this type preferable for paving feed lots and barnyards. In fact, do not use a steel trowel, but finish with a wood float, thus preventing a slippery surface.

In all concrete work every recognized requirement of good practice should be observed, otherwise some omission may result in dissatisfaction. Protect concrete work against rapid drying out by keeping it covered for several days after the last concrete has been placed. This is as important as using good materials and proportioning and placing them.

Within the next few years many farms of this country must be rebuilt, and farmers will realize that no more advantageous material with which to build enduring structures that are fireproof, rotproof, ratproof, cyclone-proof and sanitary than concrete can be selected.

POSSIBILITIES OF AGRICULTURE SHOWN IN SCHOOLS

Farmers Actuated by Motives That Reach Beyond the Market

FRANK B. PEARSON, Supervisor of Public Instruction, Columbus

WE all freely acknowledge our dependence on and our obligation to the farm and the farmer. When things go right on the farm we have prosperity and happiness, but when things go wrong on the farm we have adversity and distress. When the rain comes we rejoice because of its influence on the crops, and when the crops are languishing for want of rain our sympathies go out to the farmer. When we pass by the farm and see the crops exulting in their strength and abund-

boy in Darke County who produced 154 bushels of corn on an acre may not have known all the modern theories but he produced the corn. A man may be thoroly conversant with the theoretical side of agriculture, but we are not satisfied until we know the extent of his yield of corn. We want to see how he finishes in the race and not how he starts.

And what a man does depends in no slight degree upon why he does it. We are all actuated by motives and our mo-



Good Crops Give Us a Feeling of Pleasure

ance we all experience a feeling of pleasure. This pleasure comes to us thru the knowledge that the farm is the source of all our food and clothing.

But, true as all this is, our teaching of agriculture must take full cognizance of all this before it can come into its full fruition. These facts must become enmeshed in the thinking of all our people before the teaching of agriculture can be at its best. Agriculture is a synthetic process, a producing process, and not merely analytic. True, the analytic may need to precede the synthetic, but we fail to reach the true goal if we stop with the analytic. The

tives determine the extent and quality of our activities. Of course, the farmer wants to have a large yield and to sell in the best market. He would not be either a thrifty or a wise farmer, otherwise; but he may be actuated by motives that reach even beyond the market. He may have some large plans and purposes that he hopes to carry out by means of the money thus obtained. These plans may be large in their scope and as altruistic in their character as to proclaim him a large-minded, public-spirited citizen.

In a recent work of fiction the story opens with the picture of a little girl

eating a slice of bread and butter which is further surmounted by apple-sauce and sugar. In the mind of the farmer of generous impulses whose motives point even beyond the markets this picture is ever present. The little girl is the center and focus of all his activities. Every furrow that is plowed is plowed for her; every tree that is planted is planted for her; every crop that is harvested is harvested for her; and every train-load of grain is moving toward her as its destination. But for her the farm machinery would be silent, orchards would decay, trains would cease to move and commerce would be no more. She it is that causes the wheels to turn, the harvesters to go forth to the fields, the experimental stations to be equipped and operated, the markets to throb with activity, and the ships of commerce to ply the ocean. For her the orchard, the granary, the dairy, and the loom give of their treasures, and a million willing hands till, toil, and spin.

But the bread and butter, the apple-sauce and the sugar. These may not be omitted from the picture. The bread transports us to the fields of waving grain and conjures up in our imagination visions of harvesters with their implements, wagons groaning beneath their golden loads, riches of grain pouring forth from machines, and brings to our nostrils the tang of the harvest-time. Into this slice of bread the sun has been pouring his wealth of sunshine all summer long and into it the kindly clouds distilled their treasures. In it we find the glory of the sunrise, the sparkling dew-drops, the song of the robin, the gentle mooing of the cows, the murmur of the brook, and the creaking of the mill-wheel. In it we read the poetry of the morning and of the evening, the prophecy of the noon-tide heat, and the proclamations of Na-

ture. And it tells us charming stories of health, of rosy cheeks, of laughing eyes, of happiness, of love and service.

The butter, the apple-sauce, and the sugar each has a story of its own to tell that renders fiction weak by comparison. If our hearts were but attuned to the charm and the romance of the stories they tell, every breakfast table would be redolent with the fragrance of thanksgiving. If our hearts were responsive to the eloquence of the stories, then eating would become a ceremony and upon the farmer who provides our food would descend our choicest benedictions. If the scales would but fall from our eyes that we might behold the visions which our food foretells, we could look down the vista of the years and see the children grown to manhood and womanhood, happy and busy in their work of enlarging and beautifying civilization.

Agriculture is not the sordid thing that our dull eyes and hearts would make it appear. In it we shall find the romance of a Victor Hugo, the poetry of a Shelley or a Shakespeare, the music of a Mozart, the eloquence of a Demosthenes, and the painting of a Raphael, when we are able to interpret its real relation to life. When the morning stars sang together they were celebrating the birth of agriculture, but men became bewildered in the mazes of commercialism and forgot the music of the stars. It is the high mission of the school to lead us back from our wanderings and restore us to our rightful estate amid the beauties, the inspiration, the poetry and the far-reaching prophecies of agriculture. This it can do only by revealing to us the possibilities, the glories, and the joy of life and by causing us to know that agriculture is the source of life.

MARKETING POULTRY EARLY BRINGS BEST PROFITS

Methods of Fleshing, Killing and Dressing Chickens

D. L. GREENLEE, United States Department of Agriculture

WHEN marketing poultry it should be kept in mind that cool eggs mean cold cash and fat chickens mean a fat pocket-book. It is more trouble to keep eggs in a cool place than it is to deposit them in a handy basket in the kitchen. It is more trouble to pen up the chickens and feed them for two weeks than it is to snatch them from their roost on a dark night and haul them off to market. But profits in poul-

try have left many in financial ruin. But amid all the average farmer placidly regards poultry as unworthy of serious attention and incapable of large profits.

Thruout the middle western states, large poultry packing houses have been established for handling poultry products after they leave the farm. Twenty years ago such poultry plants were few and widely scattered, but are now to be found in almost every town of the



Chickens at University Poultry Plant

try come only to those who take infinite pains.

Many bulletins have been published by the United States Department of Agriculture, and the various State Universities and Experimental Farms on poultry culture and poultry killing and packing. It has been the subject of wide study and experimental research for years. The industry itself has reached such proportions that the annual output of poultry products is surpassed by only two or three other farm products—most noticeably by corn and cotton. Poultry products have been the source of gigantic speculations; they have piled up big fortunes, and

corn belt states. Some houses are small, but others represent an investment of thousands of dollars. Some of these packing houses are three or four-story brick or concrete buildings and have a capacity for feeding 10,000 to 50,000 chickens.

The farmer sells his chickens to small country stores or hucksters who delivers them to a poultry dealer in a nearby city. In the states of Ohio, Indiana, and Illinois, most of the poultry is dressed and packed by these small dealers and shipped to market in less than earload lots, but in the states farther west—Missouri, Kansas, Nebraska, and Iowa—the small dealer ships to a

larger centralizing plant where the poultry is handled in carload lots. There is a reason for this difference in custom between the territory east of the Mississippi River and that west of the river. East of the river the population is more dense and large cities are not more than 200 miles away from the point of production. The distance is so short that chickens can be easily shipped alive in coops. Eggs can be shipped in cases by express and reach the market in good condition. In the western states the poultry products must be transported 1000 miles or more, which makes the shipping of live poultry more difficult, and express rates prohibitively high. This necessitates car lot shipments by freight. West of the Mississippi River it is cheaper to ship poultry products in carload lots than it is to ship in single case lots, but east of the river the rate is the same on a single case as on a similar case in a carload.

The methods in the western packing houses consist briefly of (1) fleshing the chickens, (2) killing and dressing, (3) chilling, (4) packing, and (5) transporting to the distant eastern markets.

Fleshing the Chickens: When the chickens arrive at the centralizing stations the strong and healthy birds are put into one class for feeding. Experience has taught that scrawny, poor quality birds increase slowly in weight even with the best feeding. These are killed and graded as "seconds." The good birds are placed in fleshing coops called "batteries." Formally these were made of wood and looked like ordinary batteries, usually four decks high and with removable feeding troughs and galvanized pans for the droppings. In the last 3 or 4 years these long stationary batteries have been giv-

ing way to portable steel batteries. Every idea of sanitation is embodied in their construction, and each time a new lot of chickens is to be introduced the batteries are sterilized with steam or whitewash. The batteries are arranged in long rows in the station where they will have plenty of fresh air and be easily accessible for feeding. The birds are fed a ration of ground grains and buttermilk mixed to a consistency similar to buckwheat batter. This mixture can be poured from a bucket and is palatable to both the young chickens and the old hens. The fleshing period varies from 5 to 15 days and results in what is known as "milk fed poultry." During such an interim the young chickens, or "broilers," will gain from 10 percent to 50 percent in weight. This in itself would be a profitable business, since the cost of the grain consumed does not approach the value of the chicken flesh produced. Aside from the profit, this feeding process is necessary to get the birds into a condition suitable for market. The average chicken from the farm is a poor, ill-fleshed animal, which, when dressed, presents far from a pleasing appearance when put on the discriminating eastern markets.

The fleshing is one of the steps of poultry marketing which, with thought and consideration on the part of the poultry raisers, would be confined exclusively to the farm instead of to hot, brick buildings in a city. It is a source of profit which belongs to the farmer and which would be his for the taking of a little pains. He has the grain and the milk immediately at hand. His land is in need of the manure and would profit greatly thereby, whereas this is the source of much trouble and expense at the city poultry feeding station. When chickens are to be sold, the

farmer should look over his flock and determine what birds are to be marketed, then place them in suitable coops and feed them for 2 weeks on a ground mixture of common grains such as corn, wheat, oats, buckwheat, or sunflower seeds, and buttermilk or skim milk. It will not cost more than 5 or 6 cents to produce a pound of chicken flesh if such feeding is properly done, and the resulting pound of flesh can be sold at twice the cost figure. To do this fleshing in a business like way the birds should be weighed before being placed in the coops, then an account should be kept of feed used, and the birds weighed on their final removal from the coops. This will indicate to the farmer whether his feeding is profitable.

Killing and Dressing: In the commercial packing house this killing is done by one of two methods—the scalding process, or the dry-picking method. Scalding for the removal of feathers is familiar to every farmer. It is usually followed by a method of packing called “ice pack,” in which the birds are packed in barrels in layers alternating with layers of ice and shipped in this package to market. This ice-pack method has several unsanitary disadvantages and results more or less in a fraud to the consumer, since the bird takes up moisture and to this extent is adulterated. This adulteration often amounts to as much as 6 or 7 percent of the weight of the birds. The ice-pack method is being replaced by the sanitary method of dry-packing. In this process the bird is killed by the thrust of a long, narrow-bladed knife across the jugular vein thru the mouth. No cut is visible to the outside. The skin muscles are made to release the feathers by a skilful penetration of the brain with the same killing knife. The feathers are easily removed in this dry

method, an expert operator often being able to kill and remove the feathers from a hen in 1 minute.

Chilling: After the birds are dressed they are suspended by the feet on metal racks which are on wheels and can be taken immediately to a chill room where the birds are thoroly cooled. These rooms are kept at a low temperature by means of artificial refrigeration. The chickens require a period of 24 hours to assume a temperature of 32 degrees, which is most suitable for packing.

Packing: The chilled birds are then packed in boxes, one dozen to each box. Small broilers are often wrapped separately before packing with parchment paper; and some fancy qualities are wrapped only with bands or paper ribbons, bearing a trademark. Often the small hens, and in places where only a small volume of business is handled, all of the poultry is packed in barrels. Most turkeys are packed in barrels. In the commercial marketing of poultry this packing house preparation is but the beginning of the problem, but if the birds are properly prepared they are insured against deterioration during the subsequent marketing processes.

Transportation: The boxes or barrels are loaded into refrigerator cars which are kept at a low temperature during the transit period by means of ice bunkers in the ends of the cars. The railroad haul is from 3 to 10 days and usually eastward to the Atlantic coast markets. The car is ordinarily consigned to a commission man who unloads it into refrigerated rooms at 32 degrees F., and distributes the poultry in smaller lots to retail butchers and other merchants. For the most part about 3 weeks elapse between the time the chickens are killed and the time they reach the consumer. This poultry is

known on the market as fresh poultry. Sometimes during the fall season of the year when chickens are marketed in the largest quantities, the surplus is placed in cold storage to be consumed at some more opportune time, within a period of 9 months. Many states prohibit the holding of poultry products for times longer than 9 months, and a few states have limited the period to 6 months.

Careful investigation has shown that properly prepared chickens and good eggs, well packed, will be edible and palatable for a period up to 9 months.

With these commercial methods in mind the farmer is confronted with the question as to how far he can concern himself with these marketing processes. It has been suggested how the birds can be better prepared before selling, and it has been hinted that this, if properly done would result in profit, which is sufficient argument to justify a fair trial. But what should concern the farmer most is the time for selling the poultry. When is the market best? There is little profit in raising all the spring chicks to maturity and selling everything, regardless of quality, in the fall season when the market is overstocked. During the early summer or spring the young chickens, or broilers, sell at 30 cents to 35 cents per pound, and usually maintain a price as high as 28 cents even until the middle of June. The larger chickens or "fryers" rap-

idly decrease in price, selling at 21 cents to 22 cents. The still larger chickens or roasters average 18 cents, and matured hens of the small 3-pound variety often sell as low as 14 cents per pound. Old roosters average about 12 cents. The prices quoted are for dressed birds and not for live chickens.

Consider the value of the same chicken at different ages:

When weighing $1\frac{1}{2}$ pounds, value at 28 cents per pound is 42 cents.

When weighing 2 pounds, value at 21 cents per pound is 42 cents.

When weighing $2\frac{1}{2}$ pounds, value at 17 cents per pound is 42 cents.

When weighing 3 pounds, value at 14 cents per pound is 42 cents.

These are not prevailing nor standard market prices, but it often happens that they are near the market prices. This table illustrates the importance of investigating the market prices before selling, and knowing the general rule that young broilers are the most valuable. Special effort should be made to take advantage of the early summer prices instead of feeding all birds to maturity. The pullets may be kept for egg production in the spring but the male birds can be of no possible use and should be sold when at the broiler age. Valuable information will be gained as to the proper time to market poultry by watching the market quotations of a daily paper.



FARMER JONES OUTLINES A PREPAREDNESS PROGRAM

Purebred Livestock and Legumes As Necessary As Big Guns

CLARENCE M. BAKER, '16

"I AM prepared fur peace or war. I have been married for 30 years so I've been thru both. Josephine—that's my wife—sez she don't care what happens just so that they don't take our boys to be soldiers. She sez I kin go to the front but she sure needs the boys to run the farm since the time of milkin' machines and tractors are now at hand. Anyhow I never could operate them pesky critters and if it want for them boys I wouldn't have them around. That's their idea of preparedness in farming an' I guess their about right—but I never told 'em so. But the boys got all the military they wanted when they wuz attendin' the agricultural college I guess—anyways they kinder agree with Sherman and his ideas of war.

I've got kinder of a dare devil feelin' myself and am athinkin' of enlistin' in the commissary department. Not that I'm a tryin' to git out of my share of fightin' but I feel like I ought to make some sacrifices fur my country and use my talents where they'll best fit. Knowin' all about feedin' and feeds nachurally I kin give better service in the commissary department than in the trenches.

Trench fightin' is too tame fur me anyhow. A feller don't git to see the enemy an' it ain't no fun to shoot at a blind target. I've had tolerable experience fightin' bumblebees an' knowing how they attack from the rear my experience would be worth something in the trenches praps. When I go to war tho I like to attack the Hessian flies, the San Jose scale and the grub worms that destroys our crops.

I told Josephine the other day we

ought to be prepared and she wanted to know what we ought to do. I told her to have one of the boys to bore a string of portholes near the top of the wooden silo and then we would all retire to the silo when we see the enemy comin'. We kin stand a long siege on that 50 tons of good Ohio corn silage.

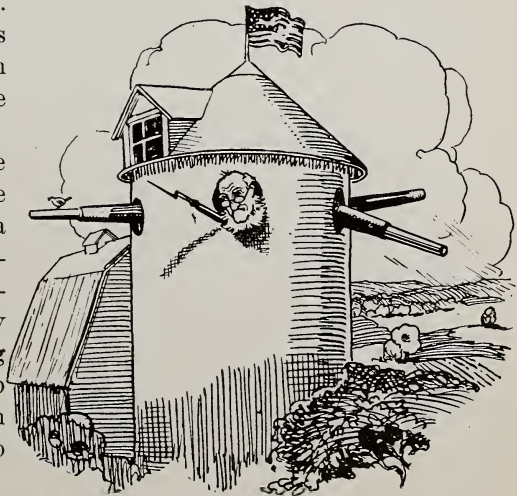
She sez: "Tom Jones, you're a big fool. Don't you know if them Germans was to turn one of them 42-centipeder guns on our place they could blow up the barn, the silo and the cow shed in one shot."

"Who sez anything about the Germans?" sez I.

"Well," she sez, "they seem to be doin' most of the fightin'."

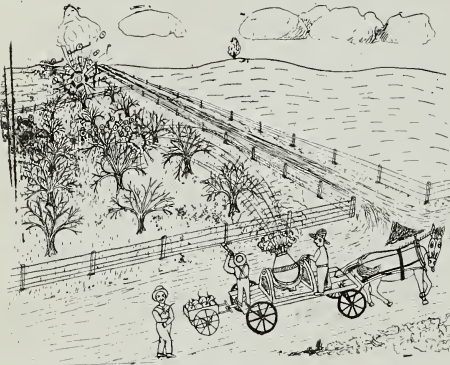
"Woman," I sez, "you can't draw me onto no argument, I'm nootral."

But gittin' down to serious business, preparedness is gist as good for the farmer as fer the city feller—even more so. 'Taint the war but just general common sense agricultural preparedness. Us farmers hain't been athinkin'



Farmer Jones in His Fortified Silo

about that enough. This preparedness movement was started a way back in Old Farao's time, who was king of Egypt. And here we are just beginnin' to realize what it means. Old Farao had been out to a banquet one night where they must of had froglegs and slewgras salad or alfalfa gravy and



**Destroying Codling Moth With Gas Bombs
Thrown From Concrete Mortar.**

consequence that night he had a dream, a nightmare in which he saw seven pure-bred Herefords comin' up outen the creek to graze in the medder. While they was croppin' the grass up comes seven lean Jersey cows. All of a sudden the Jerseys turned around and naturally swallowed the Herefords slick and clean. This woke Farao up and after drinkin' a glass of grape juice he went back to sleep.

This time he had another nightmare, seein' a stalk of corn come growin' outen the ground with seven big ears on it. And then up comes seven thin ears and the thin ears turns around and eats up the seven fat ears slick and clean.

This woke Old Farao up agin and by and by when morning came he called in all the farmers in the neighborhood and ask them what it meant. Nary one could tell him but one feller said he knowed of a feller named Joseph who could tell dreams. So they sent fur

Joseph and he explained to Farao that the 7 fat steers meant 7 years of good crops and the 7 thin ears meant 7 years of drought and famine. He told Farao he ought to be prepared for the bad years.

Farao seen that Joseph as givin' him good advice so he hired him as a preparedness expert and give the right to store up food for the next 7 years. This to my mind is the beginnin' of the county agent system which I hear my boys tell about. But I never told 'em that the county agents was a good thing, altho I think they are.

So when the dry years come and the Egyptians didn't make mor'n 3 bushel of wheat to the acre and only about a fourth of a crop of corn, then seen that Old Farao was wise in storin' up good corn so's they could get good seed. They still didn't think it would be serious so fur three seasons they come to Joseph and give up good money for what feed they needed. They didn't have no silos in them times unless may-



A Ford Equipped With Insect Guns.

be a pit silo here and there. But in the fourth year money wuz tight and it didn't rain mor'n enough to wet the ground. And then Joseph had to foreclose the mortgages and take over the farms. But he made a deal with the farmers lettin' them have seed to plant on agreement to give Farao one-fifth of the crop. In this way they man-

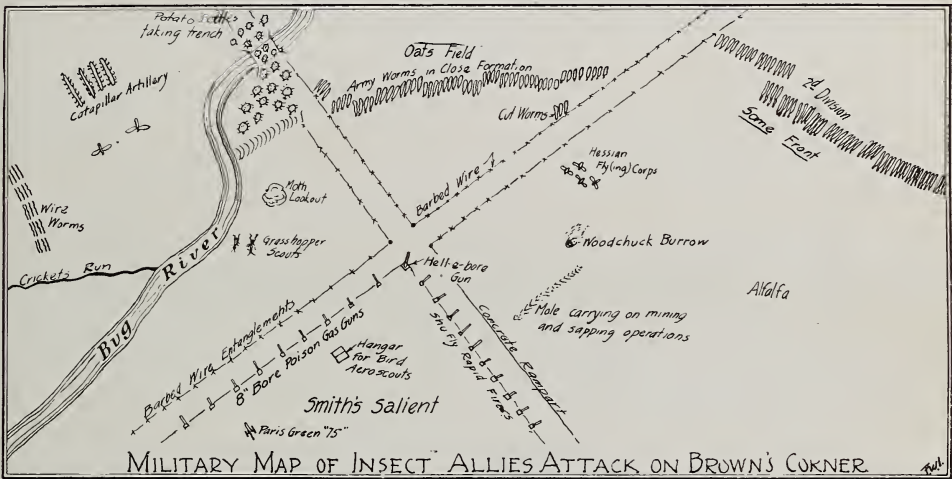
aged to pull thru because some of them got a fair crop by good cultivation and summer fallowing. Meantime Joseph's brethern came over from Canaan where the people were starvin' and in dick-erin fur a supply of kafir Joseph recognized his brethern and the family was united.

After the 7 lean years Old Farao well nigh owned all the land in Egypt that was fit for cultivation and Joseph wuz next to him, the most powerful man along the hull Nile. And this was jist because they wuz prepared when it came

since they have got to farming raise about three times as much as I did and a durn sight easier at that.

I ain't a predictin' no war but they ain't no tellin' what'll happen because we've been so blamed nootral that they are all sore at us in Europe, but what happened over there ought to make us sit up and take notice, of our own conditions. If we expect to stay in the lead in the agricultural producin' countries we got to do a hull lot better with our farms and rural conditions.

It won't take no 7 years to bring a



to raisin' and a storin' crops. They pulled the contry thru hard times fur which no doubt the Democratic party got the blame.

Now we ought to take the lesson to heart. We got a good department of agriculture in our country with slews of experiment stations and colleges to tell us all about preparin' and how to git ready for hard times or what concerns us more to make every year as good or better than the one before. It aint probable that we will have to get bread tickets and meat allowances like they have in some of the European countries but we ought to make our farms more efficient. Why, my boys

famine in this country I'm a tellin' the farmers fur I kin see that my boys are givin' more attention to the soil and they aint a tryin' to run down the farm like I did with cash crops.

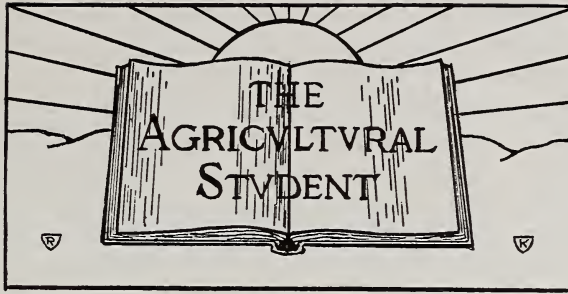
No man has a right to squander plant food or to raise scrub livestock any more in these times. We ought to all be a preparin' for the times of high-priced land instead of a thinkin' about ourselves and not of posterity. We must git anew consunce about farm land fur it's been altogether too cheap fur our own good. If we spend it, it's gone but if we invest in it, we gits returns. If we keep buildin' up the soil by returnin' the fertilizer that comes

thru keepin' livestock and growin' legumes we're layin' up something fur our children and fur ourselves if the lean years come. We got to build more silos, keep better livestock, that which is profitable, test our milkin' cows, use more machinery and put lime on our soils. It haint no use to try to grow crops on swill-sour land which ain't underdrained. I done that long enough

but my boys saw where I was and pulled me thru.

If we just keep robbin' the farms and land and a thinkin' of the immediate dollar we'll bring this country to a place where no shrewd Old Farao kin save it and where the Josephs will refuse to lend us any more money on it. Then war would be a terrible thing.





OF
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STAFF.

R. S. CHRISTEN, '17, Editor-in-Chief.

H. G. OLIN, '17, Business Manager.

RAY FIFE, '17, Assistant Editor.

E. JOSEPHINE JONES, '17, Home Economics Editor.

Associate Business Managers:

J. T. Oakley, '17.

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COLUMBUS, OHIO, SEPTEMBER, 1916.

EDITORIAL

THE ISSUE.

With this issue The Student enters on its twenty-third year. Since its beginning, many have been the trials and experiences of the persons connected with its publication, yet The Student passed thru them and keeps going steadily onward and upward.

During its early years and up until 1907, the magazine was controlled and its policies shaped largely by members of the faculty who were in reality its owners. However in 1907 the complete control was given over to the student membership of The Agricultural Society. Under this regime The Student prospered and grew until now it stands at the forefront with the other agricultural college publications. Owing to conflictions, it was found necessary to make other arrangements for its con-

trol; this bringing about the amalgamation of Townshend Literary Society with The Agricultural Society in the spring of 1916, forming The Townshend Agricultural Society. Under this management The Agricultural Student will continue to be published.

Tho its publication is controlled by this society, it is not restricted to members belonging to it but is the representative of every student in the agricultural college. If the publication is to maintain its standard set in former years and keep pace with the progress of agriculture, it must be so. It must be the expression of every individual in the College.

It is not expected that every student should be actually doing work on the paper, for there are other ways by which he may help and boost a paper

which is his representative. He may bring us a contribution. This may be in the form of a subscription, a photograph or suggestions that you think would improve The Student. They will be appreciated.

It has been the policy of The Student in years past to boost all worthy organizations on the campus, the agricultural college as well as the interests of agriculture in general. That plan will continue to be its policy.

Students in the College of Agriculture, this is your paper. It is what you make it. Your spirit of loyalty to your college demands that you take an interest in it. Help make it a better paper and certainly your efforts will be rewarded.

RURAL CREDITS LAW.

The farm loan act was signed by President Wilson on July 17. The purpose of this act primarily is to promote agricultural conditions by enabling farmers to borrow money on farm-mortgage security at reasonable rates of interest and for relatively long periods of time. To attain this end, two mortgage systems are provided: (1) a system operating thru regional banks; and (2) a system operating thru joint stock land banks. These two systems will be under the general supervision of a Federal farm loan board in the treasury department.

When this act is in full working order, loans may be obtained for the purchasing of land for agricultural purposes, for equipment, fertilizers and livestock necessary for the proper and reasonable operation of the mortgaged farm, for providing buildings and for liquidating indebtedness of the owner of the land mortgaged. The loans will be made only on first mortgages on farm land. The borrowers are limited

to those who own or are about to own and cultivate the land for which the money is loaned.

The country will be divided into 12 districts each having one of the Federal land banks, which will be authorized to make loans on first mortgages on farm lands in amounts of from \$100 to \$1000. The loans from these banks must be made thru the farm loan associations and agents and the loans will be limited to 50 percent of the value of the land and 20 percent of the permanent improvements which are offered as security.

The important provision of the act is the one authorizing the formation of local farm loan associations and credit relations between them and the bank. This provision has provided that these associations must be stockholders in the land banks in proportion to the loans that the members desire to obtain, and it is expected by the framers of the provision that all the stock of the Federal land banks will eventually be owned by these associations. This feature, if it is properly developed, will make for real results. It will bring the people of a community together in a way that they will be compelled to abide by certain business principles that will keep their credit, increase their earnings and help them to transact their business on a more satisfactory basis.

The act also authorizes the establishment of joint-stock land banks which may lend directly on farm mortgage security and to issue farm loan bonds. These books are under supervision of the farm loan board but the government does not lend them any financial assistance. These banks are free from many of the limitations of the Federal land banks. They are subject to the 50 and 20 percent valuation limitation but they may lend more than \$10,000 to

a single individual and they are not restricted to make loans for purposes specified for the Federal land banks. This banking feature for a time at least is likely to overshadow the loans made thru the farm loan associations.

It will be necessary for the farmers to study the possibilities and features of this act. Neither social nor economic conditions can be changed by merely passing laws. The law has been enacted and it furnishes a good start for a system of rural credits that has long been needed in the United States. It must be followed up by a broadened and enlightened public opinion and with cooperation on the part of the citizens whose interests are affected by it.

WHY KEEP FARM RECORDS.

Many farmers, who do not keep records, do not realize what it costs to feed the farm animals or to perform the other operations connected with the farm. It may be said that a cow will eat \$40 worth of feed a year and perhaps more if it is available; the cost of feed for a horse is variously estimated at from \$50 to \$90 a year.

It has been estimated that it requires an average of one acre in five to feed the horse used in farming. Whether these feeds are raised on the farm or considerable bought, the cost must be considered on that basis as the feeds have value. This suggests that we reduce the cost of raising and feeding animals and increase the value of the animals and animal products. If this is not done, the time is likely to come at the present rate of increase of population when few animals can be kept on American farms.

Much depends on the feeds that any people have. Nations that subsist largely upon animals and animal prod-

ucts have accomplished more for civilization than nations who do not have these foods. It is of paramount importance that the cost of producing feed be reduced and the cost of animals and their products be increased.

Aside from the problem of increasing soil fertility and other factors connected with production, this can best be done by keeping some form of records of all the farm processes so that the cost of each individual expense can be known. When the cost of each item is known steps can be taken to remedy the leaks in a systematic manner which without the records would be futile. With the increase in the price of land and labor it is preeminent that better methods of farming must be practiced and it follows that the procedure must necessarily come about thru the keeping of farm records which are used as a means of improvement.

OUR ADVERTISERS.

The standard of excellence among the agricultural college magazines that "The Student" has maintained in years past must be attributed to a large extent to its advertisers. Only advertisements from reliable and reputable firms are accepted, but on the other hand a select patronage has been established.

Whenever anyone wishes to get information about building a barn, silo, the use of machinery or the use of feeding stuffs and fertilizers, or any other commercial lines of agriculture, they will find these facts freely and gladly given by our advertisers, who maintain efficiency experts to give the latest and most efficient methods used in present day agriculture. Write to them when in doubt concerning any problem of agriculture. It will pay you.

Our local advertisers deserve the sup-

port of every one in the college. In visiting their stores tell them you saw their ad in "The Student." They will appreciate it and will take greater interest in your purchase. You will not only be benefited by doing so but you will also aid others, and incidentally, "The Student" will be able to become of greater service.

CREDIT FOR FARM WORK.

That practical work done on the farm by boys and girls should count for credit in the agricultural courses of the rural elementary and high schools is growing in popularity among the educators. The basis for this is that the farm may and should become the laboratory for testing out and putting into practice what is taught in the schools, and the schools by giving credit for this work would encourage boys and girls to work for themselves and become more helpful to their families. The difficulty experienced by educators is in defining what work the boy does on the farm should receive credit and how much credit should be given for the different kinds of work.

Real cooperation on the part of the parents is essential to make this work

successful. The parent should permit the pupil to use a specified piece of land, animals and equipment, either as a temporary owner or as tenant so far as the needs of the project are concerned; he should grant the pupil the time needed for the work and to verify the time record; he should instruct the pupil in carrying out the different practices of farming needed for the project; and he should allow the pupil the profits derived from his own labor and management.

Letting the boy carry on some home project in which he derives the profits as well as the pleasure of knowing what can be done by good farming methods, will teach him if rightly done to love the farm. The boy will think more of the time when he too can own and run a farm of his own. Farm work for school credit should be encouraged in the rural schools of this country.

ACKNOWLEDGMENTS.

For the cuts showing the new faculty members we are indebted to The Ohio Farmer, Cleveland, Ohio; The Farmers' Review for the cut on the front cover page and to the State Board of Agriculture.



WHAT DOES THE COLLEGE OFFER THE FARM WOMEN

Extension Activities Carried On Under the Smith Lever Act

RHODA E. DICK, Assistant Supervisor Home Economics Extension, Ohio State University

INQUIRIES are often made as to how the farm women of Ohio are getting any benefit from the money appropriated by the Smith Lever Act of 1914. It seems to be generally known that thousands of dollars are somewhere being circulated over the country but where it goes and who gets it seems to be a puzzle. Some have thought that the agricultural colleges have parcelled out the money to individuals in answer to their requests for aid and have been disappointed when the next mail

with new ideas about foods, clothing, household management and other home problems.

For the past 2 years, similar 1-week schools in home economics have been held in the county normal schools for the purpose of giving information and a point of view on the subject of foods that will be of practical value to the prospective rural teacher. During the past year some of the teachers who were in county normals last year have applied their home economics informa-



Who Does Not Admire a Country Home?

brought no check but a statement about the expenditure of this federal money.

What the Department of Agriculture at Washington, thru the College of Agriculture, does for the farm women is to give information that will help each one to help herself. This is done in a variety of ways, aiming to reach each year the largest possible proportion of the 400,000 farm women of the state.

Extension schools, which have been conducted for a number of years in Ohio, are of 5 days' duration. Women have come to these schools with notebooks and pencils and have gone home

with new ideas about foods, clothing, household management and other home problems.

To give further help along this line, an instructor in the extension department of the College of Agriculture gave her time the past year to demonstrate the possibilities of this work in the one room schools and in preparing printed helps that the untrained teacher may find of definite, practical value.

One of the difficult problems for the farm woman is that of water supply and waste disposal. The extension department offers the service of one of its men to those who are planning the installation of a water system. He may

give an address in which he discusses the methods and costs of installation or he may visit the farm and demonstrate the building of the system.

Special plans for farm girls were made this year in the organizing of home making clubs. They are intended for girls from 10 to 18 years of age, to increase their interest and cooperation in home activities. The clubs have their own officers, regular meetings every 2 weeks, and plans for fun as well as the work of canning, baking and preparing meals. The club leader, an adult selected from the community, attends the meetings and helps the girls

time to this work when she is not engaged as a Farmers' Institute lecturer. When a group of women wishes to form a club, she meets with them to help organize and to plan the programs.

During the winter season, a number of women lecturers are busy traveling over the state talking to the farm women, at Farmers' Institutes, about rural life and its opportunities. The institutes are an organization of long standing and have had a distinctive place in the development of farm interests.

Sometimes information is sent out in the form of bulletins. They are devoted



The Rural School an Ideal Place for Home Economics Extension Work

with their problems and their fun. At the county fair each member exhibits some of the products of her summer's work.

The department remembers the women's clubs also and sends them lecturers and demonstrators. Sometimes it is a demonstration of canning methods, of the preparation of food, or it may be a talk and a conference on labor saving devices and on the decoration of the house. One instructor gives her

to the different phases of home economics and are sent free to residents of the state. This instruction is now being supplemented by correspondence lessons.

From this it will be seen that Ohio's farm women are having at their command opportunities for learning new methods and to improve the old ones so that the management of the farm home may keep apace with the improved management of the farm land.

AGRICULTURE IN THE HIGH SCHOOL COURSE

B. M. DAVIS, Miami University, Oxford. Ohio

THERE are two types of secondary agriculture. The first is vocational or practical with two or more years, generally four, devoted to it. Here agriculture is not merely a high school subject but a course having definite practical aims. It emphasizes work rather than words, demanding that the pupil must know how, after being taught how, and measuring results in bushels and pounds rather than in marks and percentages. It is especially well developed in agricultural high schools as in Wisconsin, in regular high schools receiving state subsidy as in Minnesota and in several high schools in states where no subsidy is given as in Michigan.

The second type of secondary agriculture may be called the academic altho it has found a place in response to the popular demand for the practical. The time devoted to instruction in this type is 1 year or less. It is to be found in the majority of high schools.

It may be conceded that one-half year or 1 year of agriculture may have considerable value, but this value is apt to be over-rated. It may be questioned whether a course of this length can be justified in the ordinary high school on account of its practical value. L. H. Bailey suggests that teaching of agriculture in existing high schools should be comparable in extent and thoroughness with the teaching of physics, mathematics, history, and literature. There are three contributions that agriculture may make to a high school education. First, it gives information that is needful, for it touches every walk of life, directly or indirectly. Second, it

has much in common with other sciences for developing a scientific method of study. Third, it is an easily understood example of applied science.

If these aims are valid 1 year of instruction would be justified rather than a half year. This conclusion harmonizes with the present tendency to devote 1 year to agriculture. The work of the half year courses is based upon the textbook with emphasis upon information and little upon laboratory and field work. One-half year is too short to expect a great departure from this practice.

Agriculture is generally found in the first year of a high school course. It occupies this position not from the standpoint of educative value but rather for convenience of adjustment into a curriculum already organized. Some have justified this practice by the contention that agriculture forms a good introduction to other sciences or that it may be regarded as a general science. Others have pointed to the fact that problems will be raised in the mind of the pupil which will excite interest and will require the study of other sciences for further understanding.

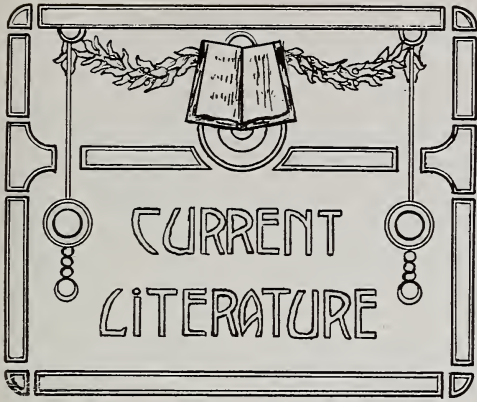
There are two objections to the use of agriculture as an introductory science. First the subject if it is made scientific is too difficult for the pupils of the first year of the ordinary high school. Second, when agriculture is taught in the grades as in a number of rural communities and again in much the same way in the first year of the high school course, the educative value will not be great. Thus it is doubtful if agriculture as a first-year subject can

make its best contribution as one of the sciences in a unified course in the ordinary high school.

The other alternative which is followed in a minority of high schools, is to have agriculture follow one of the fundamental sciences upon which it is based as botany and physics. It must be recognized that the position of a science in the third or fourth year is a desirable one from the standpoint of the teacher. There is no doubt that such a position offers advantages, especially does the maturity of the pupil make the management of the classes easier. For this reason the teacher is apt to overemphasize the subject as a branch of science instead of considering the needs of the pupil who is to be educated thru this particular subject. While it is difficult for the teacher to dissociate his interest in subject matter from the real service that it may make in the pupil's education and not lay emphasis upon the purely scientific point of view, it seems evident that the former position is the one that should be held in the teaching of science as well as of other subjects of the high school curriculum. Therefore, in determining the time and the place of the various subjects as well as in their selection this aim should be kept in mind.

The final determination of the time and position of agriculture in a unified course in the ordinary high school must be left for a broader consideration of the entire high school curriculum of which it is a part. If it is the business of agriculture as a high school subject to furnish useful information, it can hardly be justified as a part of a high school course, certainly not as a part

of a unified science course. If it is to be considered on a par with other sciences, its place must be determined by the subject matter with special relation to the pupils not only because of the peculiar service it may render him, but also with due regard to the other sciences in their service. It should strengthen the influence of the other and in turn be strengthened by them. More than any science is it correlated with other sciences, especially in an applied way. Indeed it is largely based upon the so-called fundamental sciences. If these sciences are to be studied separately and apart from their applications they will doubtless fail to carry over into agriculture much that might be reasonably expected, and at the same time lose the contribution in the way of concrete applications that agriculture may offer them. Applying this idea of correlation with other sciences to the common end of making the curriculum serve the needs of the pupils with the greatest efficiency, agriculture may supply a large variety of scientific applications and at the same time furnish an important body of knowledge of its own. Such a correlation would be two-fold, first, by other sciences making use of the concrete illustrative material that may be drawn from agriculture; and second, by a final summary of the principles of other sciences thru new associations as an applied science. If a unified science course means a correlated course, agriculture should come after the fundamental sciences on which it is based, and the time devoted to it should be commensurate with its importance in this relation which should not be less than one year.



“Productive Farm Crops” by E. G. Montgomery is the title of a book which presents in a clear and practical manner the latest scientific information regarding the production of farm crops. It takes up the classification, origin, distribution, growth and production of plants after which a detailed discussion is made of each crop and their individual requirements. At the end of each chapter will be found questions and exercises that can be used in the classroom and laboratory or field exercises. 501 pages, 204 illustrations, \$1.75. J. P. Lippincott Company, Philadelphia.

“Muck Crops” by Albert E. Wilkinson is a treatise which gives consideration to the latest modern practices that have been found most beneficial in the handling of swampy and muck soils. After a general discussion of muck soils, where they are found and their reclamation, the different crops that are best adapted to this particular kind of soil and their requirements are taken up and treated from a practical standpoint. 257 pages, 82 illustrations, \$1.25. Orange Judd Company, New York.

“Soils Laboratory Manual and Notebook” by J. F. Eastman and K. C. Davis provides a series of exercises for the

use of students whether they are in the high school or in the college. The equipment used in making these experiments is simple and inexpensive. Directions are given for studying soil formation, texture, specific gravity, soil moisture, effect of organic matter, drainage and temperature, ventilation, and testing for acidity. 87 pages, 21 illustrations. \$0.60. J. P. Lippincott Company, Philadelphia.

“Elements of Farm Practice” by A. D. and E. W. Wilson is a book that has been prepared for use in rural schools and for elementary classes in other schools wherever it is desired to study the practical problems of the farm and home in relation to daily life. It deals with the common farm practices rather than with scientific principles. The different phases of agriculture are all given consideration in an elementary way. The material is divided into lessons at the end of which are review questions and practical problems on arithmetic. 347 pages, 152 illustrations. \$1.25. Webb Publishing Company, St. Paul.

“Seeding and Planting” by James W. Toumey is a handbook for the guidance of forestry students, foresters, nurserymen, forest owners, and formers. In a brief and concise manner, it presents the latest and most important facts concerning the science and practice of all the phases of seeding and planting of forest trees. It is primarily intended for the use of the student of forestry, yet it is so written that it may be used by the practitioner. The book is divided into two parts. Part I deals with the silvical basis for seeding and planting, especially the principles underlying the choice of species, the closeness of spacing and the composi-

tion of the stand. Part II is descriptive of the various operations in artificial regeneration and the results that may be expected from the best practice. Throughout the book the author has striven to explain the why as well as the how so that the reader could have a broad knowledge of the methods and practices of forestry. 491 pages, 140 illustrations. \$3.50 net. John Wiley and Sons, New York.

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“America First” by J. L. McBrien is a book put out with the purpose to furnish material for the teachers and pupils of this country by which the idea of true Americanism may be developed until “America First” will be the slogan of every man, woman and child in the United States. The lectures and poems which are contained in the book have been selected with the aim of developing in the American youth thoughts for a definite end in patriotism and freedom for our country. 288 pages. \$0.64. American Book Company, Cincinnati.

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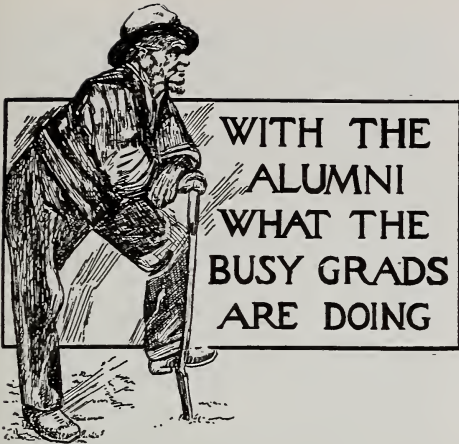
“Automobile Starting, Lighting and Ignition Systems” by Victor W. Page is a treatise that has been prepared to meet the requirements of the nontechnical reader desiring easily understood matter relating to all types of automo-

bile ignition, starting and lighting systems. It is written and illustrated so that it can be understood by anyone even without any electrical knowledge. All the leading systems of starting, lighting and ignition are described and illustrated by wiring diagrams which are shown in both technical and nontechnical forms. Instructions are given for the repair and care of storage batteries, generators, regulating devices, and motors. Data is given for locating troubles in all the systems so that the troubles may be located in a logical and systematic manner. 509 pages, 209 illustrations. \$1.50. Norman W. Henley Company, New York.

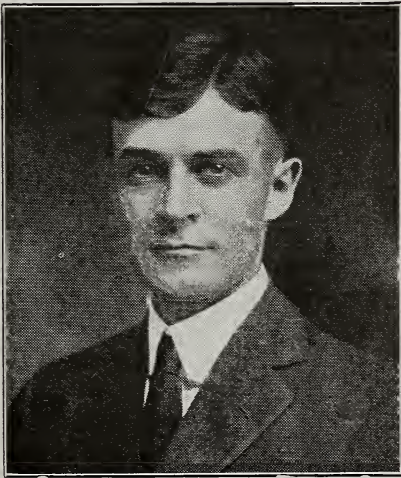
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“The Modern Gasoline Automobile” by Victor W. Page is a complete treatise on the gasoline automobile written in a simple and concise manner. It gives an explanation of all types of automobiles and their component parts dealing with their design, construction and operation in a way that it is made clear to anyone. The revised supplement contains a description of the latest development in automobile engineering design. The book is intended to be used as a handbook by the motorist or anyone interested in the automobile. 886 pages, \$2.50. Norman W. Henley Company, New York.





Firman E. Bear, '08, who was appointed professor of soils, was born and raised on a farm at Germantown, Montgomery County, Ohio. After finishing his secondary educational training in the high school of Germantown, he entered the College of Agriculture in 1904



from which he graduated in 1908 with the degree of Bachelor of Science of Agriculture.

Since graduation Mr. Bear was instructor in the extension schools of Ohio for two years and later assistant professor of agricultural chemistry. During the summer of 1908 he worked in the study of fertilizer control. One summer was spent at Cornell Univer-

sity studying chemistry and another at the University of Wisconsin along similar lines. Additional work in the chemistry of soils was taken at the University of Wisconsin in 1913-1914 for a Doctor's degree. He took his Master's degree from Ohio State University in 1910. His last two years were spent as professor of soils at the University of West Virginia.

Mr. Bear has also made a careful study of the soils of Ohio and West Virginia, which with his general training and intimate knowledge of Ohio conditions makes him a valuable man for the position. He is a member of the American Society of Agronomists, American Chemical Society and the American Association for the Advancement of Science.

Merle S. Klineck, '16, and Miss Irene E. Hay were married on May 14 at the home of the bride's parents Poughkeepsie, N. Y. After taking a trip down the Hudson River and visiting points of interest about New York, they made their home at Middlebrook Farm, Hebron, Ohio.

Rollin E. Steen, '16, is farming near Sandusky, Ohio.

Floyd A. Bensinger, '16, is with the Kelly Island Lime and Transport Company at Cleveland, Ohio.

Albert A. Tuttle, '16, is farming at Springfield, Ohio.

Oliver L. Bracken, '16, is with the H. J. Heinz Company at Pittsburg, Pa.

Robert E. Crouch, '16, will be principal of the high school at Hebron, Ohio.

Jesse E. Whonsetler, '16, is farming at Creston, Ohio.

Harrison W. Zuercher, '16, is farming at Dalton, Ohio.

Floyd S. DeLashmutt, '16, is with the dairy department at Ohio State University.

Benjamin S. Snode, '16, is herdsman at the Ohio State University.

Reed O. Bingham, '12, received the degree of Doctor of Philosophy from the University of Michigan last June and has taken a position in the department of botany at the University of Cincinnati.

M. D. Helser, '14, received the degree of Master of Science of Agriculture from the Iowa State University, Ames, and has accepted a position in the department of animal husbandry.

Water A. Alexander, '16, is head of the agricultural department at Western Reserve Academy, Hudson, Ohio.

Robert R. Barker, '16, is working in the department of soils, Ohio Agricultural Experiment Station, Wooster, O.

Elbert O. Bolender, '16, is farming at Felicity, Ohio.

Carl F. Cranz, '16, is running a dairy farm at Ira, Ohio.

John Eckert, '16, will take work for a Master's degree in entomology at Ohio State University.

Paul H. McClure, '16, will teach agriculture and coach athletics in the high school at Wooster, Ohio.

Eldon F. Dailey, '16, is farming near Albany, Ohio.

Arthur Dachenbach, '16, is farming at Bellefontaine, Ohio.

Joel L. Foote, '16, is running a truck farm near Cleveland, Ohio.

Ernest N. Fergus, '16, will be assistant instructor in agricultural chemistry at Ohio State University.

G. Glenn Guiler, '16, is farming at Whigville, Ohio.

E. H. Krause, '16, is farming at Valley City, Medina County, Ohio.

Leander D. Mennell, '16, will teach agriculture in the high school at Conneaut, Ohio.

Charles Kirkwood, '16, is farming near Mansfield, Ohio.

Joseph B. Markey, '16, will be an instructor in the department of animal husbandry, Purdue University, LaFayette, Ind.

Olin R. McMillin, '16, is farming at Marengo, Ohio.

Karl S. McComb, '16, will be an instructor in the department of physical education, Ohio State University.

Harry W. Palmer, '16, will be assistant instructor in agricultural chemistry, Ohio State University.

Glenn Swanger, '16, has charge of the meat investigation work carried on by the department of animal husbandry, Ohio Agricultural Experiment Station, Wooster.

Henry W. Schuer, '16, who has a scholarship in field crops at Ohio State University, will return to take work for a Master's degree.

George L. Schuster, '16, will be an assistant in the department of farm crops at Ohio State University.

Leland E. Thornberry, '16, is working in the department of animal husbandry, Ohio Agricultural Experiment Station, Wooster.

Clayton H. Elliot, '16, and Miss Margaret E. Norris were married on June 14 at Toledo, Ohio. They are at home at West Mansfield, Ohio.

Jacob R. Stear, '16, is in the department of entomology, Ohio Agricultural Experiment Station, Wooster.

Howard E. DeVore, '16, is farming at Gilboa, Ohio.

W. Dayton Axtell, '16, is supervisor of a cow testing association in Trumbull County, Ohio.

Uri F. Bruning, '16, is operating a 240 acre livestock farm near Pemberville, Ohio.

Robert Lewis, '16, is herdsman at the State Farm at Orient, Ohio.

Leon M. Evans, '16, is running a livestock farm near Jackson, Ohio.



Harry C. Hyatt, '11, has recently been appointed forester for the park department of the City of Cleveland. He succeeds John Boddy, who rendered services of a high order and made Cleveland famous for the beauty of its parks, but resigned recently to attend to private landscape and forestry work.

After his graduation in 1911, Mr. Hyatt was employed by the state of Illinois as a farm inspector and a district lecturer. Later he opened offices in Cleveland as a landscape architect. In 1914 he accepted a position with the city beautification committee of Los Angeles in the "City Beautiful Campaign" preceding the opening of the San Francisco exposition. After completing his work in Los Angeles he was employed by the board of education of Venice, Cal., to lay out the grounds for a 20-acre college campus. His selection as city forester of Cleveland is in line with the modern idea of picking the best men for public service.

Dexter N. Lutz, ex-16, will teach botany and zoology at Fiske University, Nashville, Tenn.

Russell L. George, '16, is herdsman at the Hilltop Ayrshire Farm, Wheeling, W. Va.

Harold M. Lathrop, '16, is farming at Wellington, Ohio.

William H. Lapp, '16, is working for Swift and Company at Chicago.

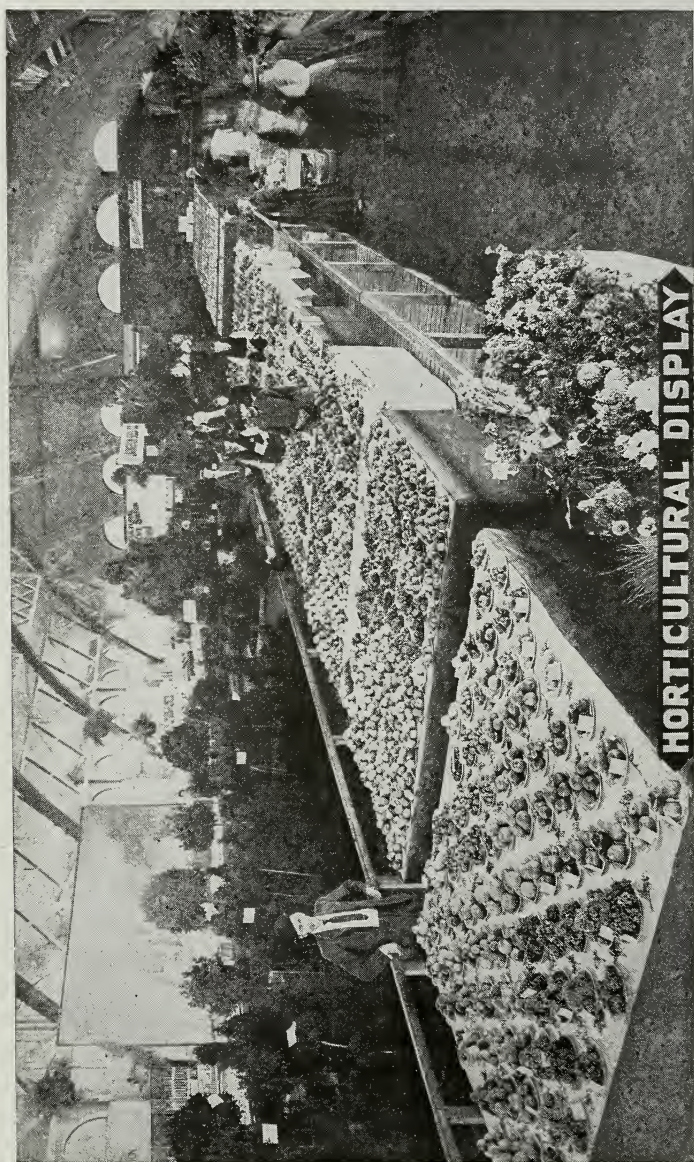
Rossford Jones, '16, is farming at Radnor, Ohio.

O. M. Johnson, '08, who was appointed state leader of county agriculturists, was born on a farm near Pana, Illinois, but later moved to Ohio. After finishing his secondary education in the public schools he entered the Ohio State University from which he graduated in 1908 with the degree of Bachelor of Science of Agriculture.

After graduating Mr. Johnson engaged in commercial work 1908-1910, extension work in soils, Ohio State University, 1910-1912, and since 1912 he was head of the department of farm management at the University of West Virginia. In this position he had charge of the experimental and investigation work carried on by the department and one year was state leader of the county agents of that state. Besides having an intimate knowledge of the conditions in Ohio and West Virginia gained thru his many years of experience, he also spent a summer in Europe studying farm conditions. He began work in his present position on July 1.

W. E. Hanger, '11, and Miss Mary Sherwood were married on June 5. Mr. Hanger has charge of the extension work in farm crops at Ohio State University.

D. R. Van Atta, '10, gave several fruit thinning demonstrations during July. In cooperation with the county and district superintendents of schools, he is encouraging the club and contest work in Hamilton County.



At the Ohio State Fair

SEPTEMBER NEWS NOTES

SCHEDULE FERTILITY TALKS.

M. A. Bachtell and W. E. Hanger of the Agricultural College Extension Service, Ohio State University, have been scheduled to September 8 for fertilizer and soil fertility demonstrations. Each of these men will give one demonstration at least per day and several wherever possible.

A. G. Smith, agent for Stark County, has planned for 24 meetings in that section, an entire week being given to this phase of extension activities. K. C. Egbert, agent for Sandusky County, and Agent S. B. Stowe of Clermont County, plan to arrange for a number of fertility demonstrations in their respective sections.

Seed corn selection demonstrations will be scheduled by the Agricultural College Extension Service during September.

R. C. Miller, specialist in agricultural engineering, became a member of the Agricultural College Extension Service, July 1. He will assist in farm engineering extension projects.

COOPERATION IS A BIG FACTOR.

That cooperation and organization among farmers is helping to solve rural problems was the opinion voiced by the county agricultural agents of Ohio at their two-day conference held at The Ohio State University, Columbus, July 25 and 26. Fourteen county advisers were present, and the entire time of the conference was used in discussing means and methods in organizing farm communities to promote agricultural interests.

M. C. Thomas, agent for Marion

County, reported that during the year ending July 1, 1916, 12 township associations had been formed in his county, seven of which will have their headquarters in centralized school buildings now in the process of construction. Mr. Thomas, through the cooperation of breeders and farmers in the county, has almost completely stamped out hog cholera, which in former years caused a loss of nearly \$100,000 annually. He also influenced more than 50 farmers to plant soy beans, a crop which aids materially in restoring fertility in poor land. Formerly the crop was not grown in Marion County.

In Mahoning County, which is under the leadership of D. W. Galehouse, 400 farmers cooperated with their agent in treating seed oats for smut, thus preventing a loss of several thousands of dollars. Those who did not treat their seed now find their oats infected with the smut to an unusual extent. Mr. Galehouse has approximately 250 boys and girls in the county enrolled in the Boys' and Girls' Club Work.

M. O. Bugby of Trumbull County is active in starting a county paper, "The Trumbull County Rural Associate," which will be the official organ of the county improvement association, the public schools and the farmers' club. Each organization is to have an associate editor which will contribute to the publication. In Trumbull County the granges have been active in promoting the farm bureau work.

H. P. Miller of Portage County reported that the beneficial results secured from using lime in that section had influenced many farmers to use carloads, where wagonloads were used formerly. Mr. Miller finds that a weekly letter to all the members of The

Portage County Improvement Association serves to keep all interested in farm bureau projects. The cow testing association work is making good progress in that section.

E. J. Riggs, agent for Washington County, reported that the Chamber of Commerce at Marietta was interested in the farm bureau projects and were cooperating with apple growers in promoting the annual apple show in that county. Last winter several hundred farmers were guests of the Chamber of Commerce at a banquet at Marietta. The farmers and members of the county improvement association are planning to return the favors with a picnic at the county experiment farm for the business men.

TO DEAL WITH RURAL WORK.

L. O. Landis, formerly a teacher at North High School, Columbus, became a specialist in the Agricultural College Extension Service, July 1. His work will deal with the presentation of rural life activities and rural social organization through the farmers' institutes, extension schools and special meetings. Mr. Landis is a graduate of Miami University and has taken post-graduate work in rural economics and sociology at the Ohio State University and University of Wisconsin. He has contributed quite extensively to farm papers and has lectured for the Agricultural College Extension Service at special meetings for the past two years.

429 INSTITUTES SCHEDULED.

With a total of 429 farm institutes scheduled and 50 speakers to lecture at the meetings, F. L. Allen, state leader, reports that everything points toward a successful season which opens Monday,

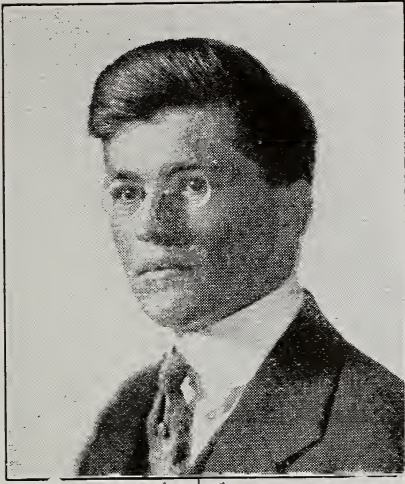
November 13. The speakers this year are to give special emphasis on the work of community organization and rural service. The list of speakers includes practical farmers, farmers' wives and experts from the Ohio Agricultural Experiment Station.

There will be a slight change in the method of furnishing speakers this year. Instead of providing two state speakers, for two days at each institute, as has been customary, one experienced man will be sent to each institute for two days. He will be assisted one day by a lady speaker, and the other day by a specialist, chosen to meet the needs of the community.

At a meeting of all the institute workers held at the Ohio Agricultural Experiment Station during the third week in June, agricultural engineering was adopted as a new topic for this year. This includes lectures in farm water supply, disposal of sewage in county homes and the general use of labor-saving devices about the home. These lectures are to be illustrated by charts which are being prepared by the agricultural engineering department of the College of Agriculture, Ohio State University.

Practically every county in the state will have five institutes this year, although a few counties have not applied for the full number. County agents, wherever established, have been consulted in the location of institutes and extension schools.

P. B. Potter has been appointed instructor in the department of agricultural engineering. He comes from the Kansas Agricultural College where he received the degree of Civil Engineering and the degree of Bachelor of Science in Agriculture.



Albert C. Holtes appointed assistant professor of horticulture received his early education in the public schools at Ithica, New York. Later he attended Cornell University from which he received his Bachelor's degree in Agriculture in 1913 and his Master's degree in 1914. Since then he has been instructor in floriculture at Cornell.

Mr. Holtes is enthusiastic regarding the possibilities of floriculture in Ohio and comes with the heartiest recommendations of such men as Dean L. H. Bailey. He has already become prominent in floricultural circles, and his appointment is highly welcomed as Ohio is one of the most important floricultural states of the country.

Mr. Holtes is a member of the Nomenclature Committee of the American Gladiolus Society, a contributor to Bailey's Cyclopedia of Agriculture and also he has had published several articles in the Journal of Heredity and the Florists' Exchange. His special line of work will be to develop the floricultural courses at Ohio State.

CLUB MEMBERS TOTAL 3233.

With 628 enrolled in the Pig Growing Clubs, 653 in the Poultry Clubs and 1665 in the Home-making Clubs, the

total number in the Boys' and Girls' Club work conducted by the Agricultural College Extension Service through State Leader W. H. Palmer is 2965. In addition there are 285 who are enrolled in the Boys' Livestock Judging Contests.

During the past two months representatives from the Agricultural College Extension Service have visited the clubs, giving instruction in livestock judging, feeding, record keeping, and home canning. All members of the clubs are required to send reports of their progress to the state leader. The products of the club members will be exhibited at county fairs and the winners announced at that time. The members of the Pig Growing Clubs will also compete in a livestock judging contest at their county fair. Members of the pig clubs are required to exhibit at least one pig, and the poultry club members at least five birds.

The following have been suggested as articles to be exhibited by girls in the Home-making Clubs at the county fairs: Baking: one loaf of wheat bread and one dozen Parker House rolls. Fruit: cherries, pears, peaches, blackberries or raspberries, 1 quart can each. Jellies: two glasses selected from the following—currant, blackberry, apple or green grape. Vegetables: tomatoes, beans, corn, greens, 1 quart can each. Preserves: strawberry or rhubarb, 1 glass each.

D. W. Galehouse, agent for Mahoning County, has 250 boys and girls enrolled in the club work. M. H. Barter, agent for Geauga County, has 12 boys in one pig growing club, and E. A. Brenneman of Montgomery County, 34 boys in pig growing clubs. Wherever county schools have promoted Boys' and Girls' Club Work, county agents have cooperated.

WHAT DOES THE COLLEGE OFFER THE FARM BOY?

In the fall of 1914, the College of Agriculture gave for the first time work in the three-year course in agriculture. This course was given because of the demand on the part of the farm boy who wanted a college training and was unable to take advantage of the regular four year course either because of lack of entrance requirement or because of being needed at home during the spring, summer and fall months. For the boys

The work of the course includes instruction in agricultural chemistry, livestock judging, soils, horticulture, dairying, farm engineering, farm crops and farm management, besides a course in English given during the first year of the course.

The students in the course are offered the same advantages as are offered to the other four year students in the College; they have the use of the



Students Judging Livestock

who want the advantage of such training, the College gives them that opportunity in the three year course.

This course which extends over 3 years of 5 months each, beginning about October 15 and ending about March 15, is a practical course covering as much of the field of agriculture as can be undertaken in the time available. There are no entrance requirements for the course but a good common school education is desired.

same buildings including the University library, laboratories and equipment, greenhouses; and the same instruction. They have their own athletic teams and enter in competition with the students in the other colleges of the University.

Many of the students after finishing their work, if they do not farm for themselves, become farm managers and creamery manufacturers. The demand for such men being large according to agricultural college officials.

WILL THE UNIVERSITY GRANGE RECORD BE BROKEN?

Will the record for initiation and total enrollment made by the University Grange last year be broken? Several of the granges at other universities are planning to increase their membership during the coming year. Already the grange at Cornell University has made plans to materially increase their membership and if possible beat the record made for initiation and total enrollment, by the University Grange last winter.

and to bring in rivalry, the grange was divided into two parts, each forming a team and each having a leader. The contest started in October, 1915, and ended in the record made for initiation in February, 1916, with a class of 283 candidates. This broke all previous records made for initiation at one time in the United States by 103, the largest previous record being 180.

The first meeting of the school year will be held on September 27. At this



University Grange in Session

University Grange was chartered in 1905. During the first years its growth was slow and it usually had about 30 or 40 members. However, it grew steadily and in the fall of 1915 it had about 90 members. At this time plans were made to increase the size of the grange and to reach more students so that the grange could have a broader and wider influence in its work for the betterment of the College of Agriculture and agriculture in general.

For the purpose of soliciting members

meeting it is planned to have a reception and to stir enthusiasm in the members and make the year for the grange at Ohio State greater and better than ever. It will be the purpose of the grange this year to develop the social side by organizing a glee club, quartette, a dramatic club and other plans will be made which will be of use to students who wish to do grange work in their home communities, little being done in this direction last year.



Dr. Jay B. Park recently appointed professor of farm crops at Ohio State University was born and raised on a farm in Ford County, Illinois. Dr. Park received the degree of Bachelor of Science of Agriculture from the University of Illinois in 1908 and later his Master's degree in agronomy from the same place. After working for two years in the agronomy department of the Illinois Agricultural Experiment Station he went to Harvard University where he was a student in plant breeding under Dr. East receiving his Doctor's degree this spring.

He comes to Ohio State University with the strongest recommendations and is a man of fine personality. His presence will strengthen the work of the farm crops department.

OHIO FIRST IN TESTING WORK.

With an increase of 300 per cent in the number of cow testing associations organized during the last year, Ohio now has 20 associations, 15 of which were started since September 1, 1915. Nine of the associations were started under the cooperation of county agents and five others were partly formed

through their efforts. Ohio leads all other states in the number of associations formed during the past year, and is surpassed by only one other state in the total number of associations in operation. The average increase in associations for all other states is 52.2 per cent; the increase in Ohio is 300 per cent.

The Barnesville association, located at Barnesville, Belmont County, has been in operation for two years, with complete records kept of 301 cows. In 1914-1915 the average number of pounds of milk per cow was 5444; the average number of pounds of butter fat produced was 279.2. The profit above feed cost was \$61.95 per cow. The figures for 1915-1916 show an average production of 5595 pounds of milk, 283.4 pounds of butter fat and an average profit of \$67.71 more than the fed cost.

Net increase per cow for one year was approximately \$6, making the increase in the returns of the association nearly \$1800. This is what the value of the tester is worth in money to the members of the association.

The highest producing cow in the Barnesville association returned a profit above feed cost of \$168.09 for 1914-1915. Her record was 8985 pounds of milk and 537 pounds of butter fat. The cow having the lowest record showed a loss of \$5.11; her record was 1634 pounds of milk and 83.6 pounds of butter fat.

By disposing of unprofitable cows and following better methods of feeding, one herd owner was able to increase the profits above feed-cost from \$94.81 per cow in 1914-1915 to \$127.60 in 1915-1916. The milk production was raised from 6714 pounds to 7888 pounds per cow during the second year; the production of butter fat was increased

from 300.2 to 347.9 pounds. During the second year more heifers were used to take the place of low-producing cows disposed of after the first year of testing.

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The Holstein-Friesian cow, Queen Piebe Mercedes 154610, has broken the record for fat production in the junior four-year class of the semi-official yearly division by producing in 365 days, 30,230.2 pounds of milk containing 1,111.56 pounds of fat. She freshened at the age of 4 years, 4 months and 22 days. Her sire is Sir Pietertje Ormsby Mercedes 44931 and dam Queen Piebe of Fairview 71624. She is owned by Mr. E. C. Schroeder of Moorhead, Minnesota. She displaces Milanhurst America DeKol 143441, whose record for 365 days was 26,433.4 pounds milk containing 985.08 pounds fat.

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William L. Clevenger of the dairy department and Thomas D. Phillips of the department of rural economics attended the graduate school given at the University of Massachusetts, Amherst, Massachusetts. They made the trip in an automobile.

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Professor Robert B. Stoltz of the dairy department spent the summer vacation taking advanced work in cheese-making at the University of Wisconsin. He also visited cheese factories in different parts of Wisconsin to study the different systems of management employed in each.

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With 802, Ohio leads all other states in the United States in the number of Jersey cows on yearly tests. During the year ending August 1, 1916, the department of dairying conducted 6445 yearly tests on 1266 cows in 120 herds. Of these, there were 802 Jerseys, 159

Holsteins, 154 Guernseys, 125 Ayrshires, 23 Brown Swiss and 3 Short-horns. The department also conducted 1084 7-day tests on 757 Holstein cows in 150 herds, making a total of 2350 cows tested by the department during the year.

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As a result of a joint conference of a committee of the Ohio Guernsey Cattle Association and Prof. Charles S. Plumb, head of the animal husbandry department, the University recently purchased four Guernsey cows. These four cows are of American breeding and trace back thru the prominent American families. Their addition will greatly improve the quality of the animals of this breed which have formerly been in the university herd.

Mr. E. H. Baker, who was on the Guernsey Cattle Association committee, being interested in the Guernseys at the University, presented it his 5-year-old bull, Governor of Keewaydin 19848. This bull was twice champion of the breed at the Ohio State Fair and is favorably known among the Ohio Guernsey breeders. The University feels grateful to Mr. Baker for his generosity in this gift.

Other additions to the University livestock herd during the summer includes a 2-year-old Shropshire ram purchased from Mr. George McKerrow and sired by the celebrated Senator Bibby. It takes the place of the imported ram purchased 2 years ago that did not prove satisfactory. Also a large type Berkshire sow from the Bedminster Farms, New Jersey, was purchased for the purpose of adding more size to the Berkshire hogs in the University herd.

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The annual meeting of the American Association of Instructors and Investigators in Poultry Husbandry was held

at the University August 2, 3, 4. The general sessions were held in the judging pavilion. At the opening session President Thompson gave an address of welcome. Wednesday, August 2nd, Dean Vivian gave an illustrated address upon agricultural conditions in the various farming countries of Europe. On Friday morning Professor Plumb discussed the relationship of animal husbandry to the poultry interests of Ohio. The animal husbandry department gave a reception on Thursday night to the members of the association. About forty prominent educators and investigators in poultry husbandry from various points of the United States and Canada were in attendance. Much appreciation was expressed by the members of the association for the treatment accorded them by the University and the department of animal husbandry.

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Plans are being made for sending two livestock judging teams this fall, one to the National Dairy Show at Springfield, Massachusetts, and the other to the International Livestock Show at Chicago, Illinois. Twenty students took the course in dairy cattle last semester from which a team of three will be chosen to represent Ohio

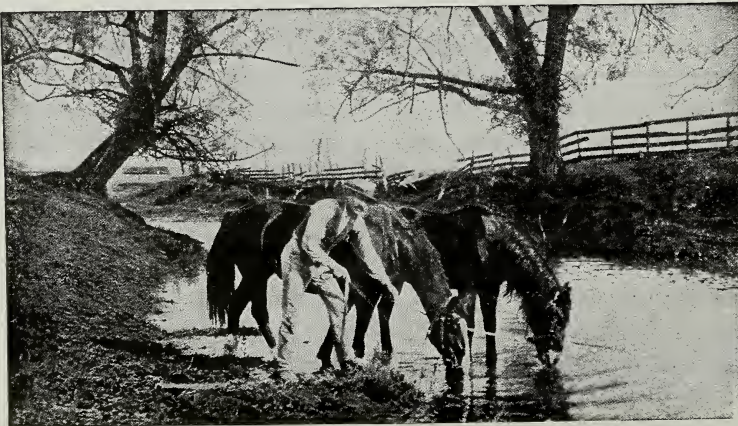
State at the dairy show. It will be remembered that Ohio State took first place at the last show held 2 years ago at Chicago.

The team for the International Show will be picked from the class in advanced livestock judging. About 25 students took the course last year, but this year it is expected that more will take the course and try out for the team because of the interest in the International Show which was not held the last 2 years because of foot and mouth disease. This team will be composed of five members.

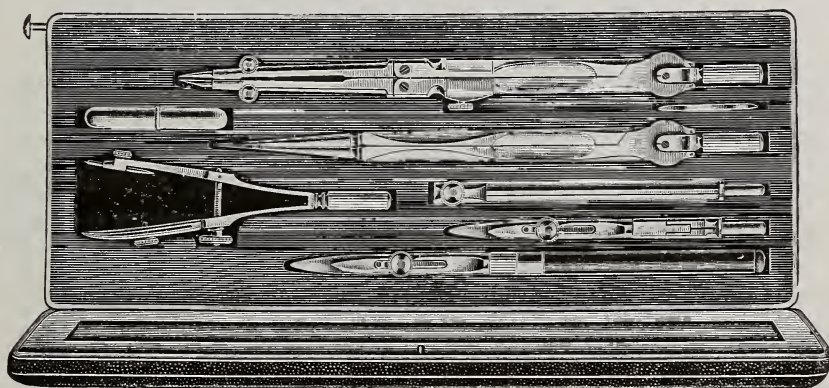
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NEWSPAPERS HELP AGENTS.

That county newspapers were interested in the work of county improvement associations was brought out at the conference of the county agricultural agents of Ohio at Columbus, July 25 and 26. Practically every agent in the state uses the papers in his locality to promote farm bureau activities and finds them one of the most effective means of communication. In several instances the county agents are on the regular "beats" of the city reporters, and other papers have their county agents prepare several columns weekly.



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SEASON 1916-17.

Fall Term Calendar—Season's Openings.

Beginners' classes Tuesday evening, Sept. 12, and Friday evening, Sept. 22, 7:30 o'clock. First lesson.

Advance class Monday evening, Sept. 18.

Reception Night Thursday evening, Sept. 21.

Reception Night Saturday evening, Sept. 23 (front hall).



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Announcement

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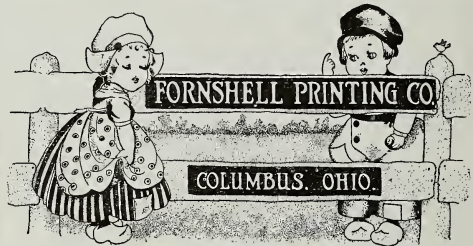
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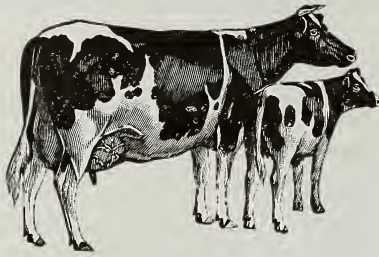
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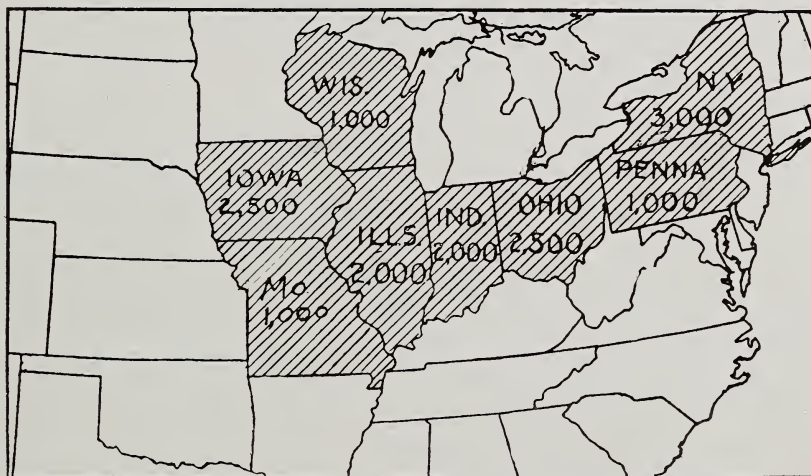
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